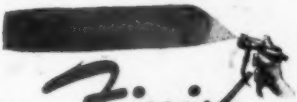
NOVEMBER, 1943

# Industrial FINISHING

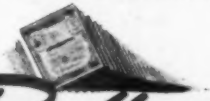
Published Monthly in the Interest of Modern Production Finishing

TECHNOLOGY DEPT. PUBLIC LIBRARY
NOV 23 1943
DETROIT

Let's MAKE EVERY Minute COUNT
by turning out more and more war equipment



Let's MAKE EVERY Finish COUNT
by using LILLY'S DEPENDABLE FINISHES



Let's MAKE EVERY Dollar COUNT
by buying more and more WAR BONDS

Lilly FINISHES

LILLY VARNISH COMPANY

THE LILLY COMPANY, High Point, North Carolina

# TOUGH JOBS STILL CALL FOR *Rincontrol*

If you have had trouble getting out production with China Wood Oil, free wrinkles on parts that require toughness and all around resistance to hard service and abuse, our less critical formulation of Rincontrol, the *improved* textured enamel finish, may answer your problems for the following reasons:

1. Wood oil free Rincontrol is comparable with our standards in uniformity, toughness, abrasion resistance and glare prevention.
2. It bakes out equally well in either conventional ovens or infra-red equipment. A typical baking cycle for Rincontrol is 1 hour at 300°F. in convection oven, or 20 minutes at 300°F. in infra-red.
3. Roxalin's principle of adding Rincontroller, the catalyst which controls wrinkling properties, just prior to application, prevents skinning in the container, loss of wrinkling properties, and always insures a freshly made enamel.

We will welcome the opportunity to discuss your finishing problem.

**WHERE THE FINISH COUNTS USE ROXALIN**

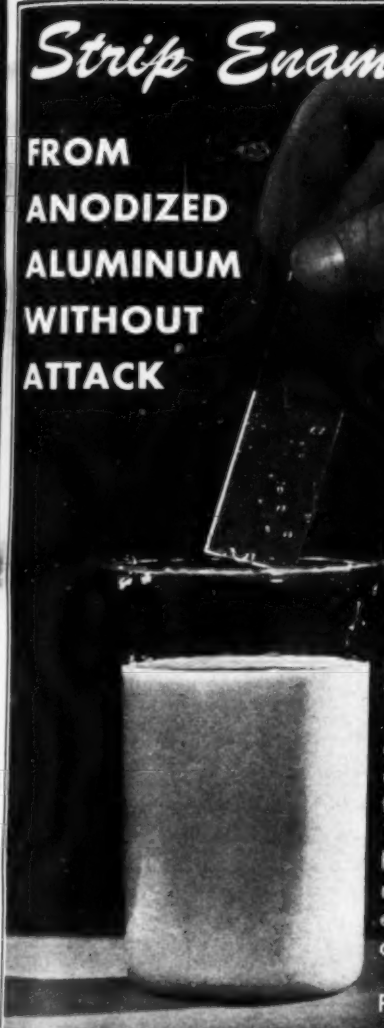
**ROXALIN *Flexible* FINISHES**

INCORPORATED

BOX 113. ELIZABETH F. NEW JERSEY

# *Strip Enamels*

## FROM ANODIZED ALUMINUM WITHOUT ATTACK



Enthone Enamel Strippers have no action on anodized aluminum, aluminum alloys, zinc or magnesium.

Their use means fast stripping of enamels without attacking the base metal.

Enthone Enamel Strippers are emulsion type materials used mixed with water and in the temperature range from 160 to 168 F. Urea-formaldehyde, melamine, glyptal, phenolic and other synthetic enamels are removed quickly and cleanly.

Special Strippers for Special Problems.

Tell Us Your Problem

ENTHONE

THE **ENTHONE** CO.

442 ELM STREET NEW HAVEN 2, CONNECTICUT

# *It's the Finish On The Job that Counts*.. NOT IN THE DRUM

**Here's proof that it's the finish *on the job* that counts —not the finish in the drum. Seldom has finish been called on to stand up under such grueling conditions as on the steel cartridge cases used to replace brass. Inside and outside the case, in all climates, against a wide variety of corroding agents, right into the breech of the gun—this finish must be perfect.**

**In creating its steel cartridge case finish that exceeds even rigid Government requirements, Zapon technicians relied on no mere formulation, no products that might be mathematically good in the drum but an unknown quantity on the job. They worked synergistically, put their brains together with those of military men and cartridge case manufacturers. The results, as usual when synergism is employed, surpassed expectations.**

**Synergism as practiced within Zapon and with customers pays minute attention to production methods and procedures for doing the most efficient job of finishing. But above all, the final result, the finish in action and how it will fare, are paramount. With the synergistic approach, finishes on the job prove out. Let's talk over your problems.**

**WHAT IS SYNERGISM?**

**In Synergism, forces—minds—work together to produce results greater than both working separately might achieve, making 2 + 2 = 5.**

ZAPON

**ZAPON DIVISION · ATLAS POWDER COMPANY**

*Eastern Sales:* Stamford, Conn. *Western Sales:* North Chicago, Ill.

**INDUSTRIAL FINISHES**

R v.20 Nov. 1943 - Oct. 1944

/ENTIETH YEAR OF PUBLICATION

# Industrial FINISHING

W. H. ROHR, Editor E. A. DOSCH, Assoc. Editor

Vol. XX, No. 1 NOVEMBER, 1943 $2.00 a Year

## Contents of This Issue


Letters from Readers ..... 4
The High Production Painting of Shells ..... 12
Machine Tool Finishing Under War Conditions ..... 20
Painting M-4 Tanks ..... 28
What Finishes You Get for Civilian Furniture ..... 37
Merry-Go-Round Coats and Bakes Relay Coils ..... 48
Materials, Supplies, Equipment ..... 60
Questions and Answers ..... 72
Booklets, Catalogs, Circulars ..... 82
Editorial ..... 86
Random Comment on the Industrial Scene ..... 88
"Classified Advertising" Section ..... 99
Advertising Index ..... 100

Colors for Safety ..... 18
Notice to All Manufacturers ..... 18
Paint Can Vibrators ..... 26
Newbery Becomes Sales Manager of Detrex Corp. ..... 26
Freight Car Cleaning and Painting ..... 54
Abrasive "Spirabands" for "Smoothing" Jobs ..... 56
Dr. E. H. Kessler, of Thresher Varnish Co., Dies ..... 68
Pumice Mines Retaken ..... 68
American-Marietta Co. Plans Future Expansion ..... 68
Turco Products' Research Work ..... 68
Dope Control ..... 92
Wartime Furniture Finishing ..... 96
Factory Fires ..... 97
Becomes Industrial Sales Manager of Thresher Varnish Co. ..... 98
More About Metal Cleaning ..... 98


Owned and Published by
**Practical Publications, Inc., 1142 North Meridian Street, Indianapolis 4, Ind.**

Eastern Representative: C. A. Larson, 254 West 31st St., New York 1, N. Y.; Phone Penna. 6-9049

**THE IDEAL FINISH**

for both novelty and utility

is

**FLOCKS**

as produced by

**CLAREMONT**

Available in all colors and various lengths — precision cut, for application on practically any kind of surface, by screen process or spray gun.

**COTTON**
**WOOL**
**RAYON**

in brilliant colors — either standard or dyed to order. The logical source for best quality and service, is the country's largest exclusive flock manufacturers—that's us.

**CLAREMONT**
**WASTE MFG. CO.**

CLAREMONT, N. H.

# Letters from Readers

## Cleaning Steel Drums

With reference to the inquiry in the Oct. issue, on page 4, for information on cleaning and painting used steel drums, your inquirer might be interested in Deoxidine, in preparing the drums for painting. If you care to pass this information on to him, we will be very glad to supply such additional information as he may require for the use of Deoxidine for the purpose mentioned.—American Chemical Paint Co.

## Waterproof Sealer For Artificial Bait

We notice a very interesting article in the Q. & A. section of June issue of INDUSTRIAL FINISHING (page 76) with reference to waterproof coatings for laundry washers. We are interested in a water-repellant material that will prevent cracking and peeling on artificial baits. We formerly used white cedar, but on account of the scarcity of this material, it is necessary for us to use white pine. Our present waterproofing solution does not prevent cracking on this material.—X. Co.

## Cigarette-Proof Finish

We are interested in contacting a manufacturer of burn-proof finishes that will resist cigarette burns. We would appreciate your sending us any information you may have on the subject.—G. S. Co. (Research Lab.).

## Electrical-Conducting Paint

In your Sept. 1943 issue, on page 8, you state that a paint containing metallic flakes should conduct an electric current. I should like to bring

Wherever you find
Uncle Sam's Air Corps, Signal Corps or Ordnance Depots
you'll probably find

**DOLAN'S *"Unquestionable Quality"* FINISHES**

We have supplied many thousands of gallons of

★ O. D. LUSTRELESS
★ O. D. SEMI GLOSS
★ REFINISHING PRIMERS
★ ROT INHIBITERS
★ ZINC CHROMATE PRIMERS
★ AIRPLANE DOPES
★ "843" WATER STAINS
★ MARINE FINISHES, ETC.

We invite your inquiries on any Specification Finishes.

**V. J. DOLAN & COMPANY, INC.**
*Manufacturers of* "UNQUESTIONABLE QUALITY" *Industrial Finishes*
1830 N. LARAMIE AVE., CHICAGO, ILLINOIS

**I. C. D. FORMULA NINE**
**NON-INFLAMMABLE**
**« *wax free* REMOVER »**
**for paint, varnish, lacquer, baked enamel, adhesives**
**EASY TO APPLY—NO AFTER-CLEANING**

ORDER TRIAL GALLON AT DRUM PRICE

**I. C. D. FORMULA 9** is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings . . costs less to use . . saves time, labor and material.

**SPECIALTY COATINGS**—I. C. D. Labs. have specialized in the formulation and manufacture of non-inflammable coatings and substitute finishes. If you have a tough coating or finishing problem send in your specifications, finishing schedule and requirements. Immediate action and a prompt reply promised.

INDUSTRIAL CHEMICAL DEVELOPMENT CORP.

# United's NEW WRINKLE

## Made from Non-Critical Oils

The use of critical oils in wrinkle finishes has been prohibited due to a critical shortage.

United's Technical Staff has met this challenge by developing a new wrinkle which is formulated from non-critical oils. It has the characteristics of our standard wrinkle regarding appearance, uniformity, application, and baking schedule, etc. It is available in various colors and shades.

*A trial order will convince you of its merits.*

United Lacquer Mfg. Corp.

UNITED LACQUERS

General Offices & Factory: LINDEN, N. J.

New England Mfg. Div.: Boston, Mass.

*Lacquers — Synthetics and Special Protective Coatings for All Surfaces*

## "TAKE HER DOWN"

AIRPLANES

GUN STOCKS

BOMB SIGHT BOXES

TOOL CHESTS

MARINE PARTITIONS

RADIO INDUSTRY, ETC.

SKIS

INSTRUMENT BOXES

COMMANDER H. W. GILMORE, USN, Captain of a U. S. Sub, spoke these famous words, "Take Her Down," as he lay mortally wounded on her bridge.

While maneuvering his sub into a position to ram a Jap gunboat he was struck down by machine gun fire. He immediately ordered his men below and then gave his now famous order.

It is this brand of courage that inspires all of us on the home front to work harder. Buy more War Bonds, subscribe to the National War Fund and do everything we can to support our fighting men.

*Listed here are a few of the war products now being coated with our materials. Phone, wire or write and let one of our finishing experts help you "keep production rolling."*

**THERE'S NO TIME TO LOSE—THERE'S JUST TIME TO WIN!**

THE LAWRENCE-McFADDEN CO.

Headquarters for Fine Finishes Since 1875

7430 STATE ROAD PHILADELPHIA, PA.

to your attention the fact that this laboratory has carried out a number of tests on aluminum and copper paints. In no case did the paint act as a conductor, when voltages up to 1,200-volts were applied, and no flash-off over the surface took place under the same conditions.

Should you know of any recent development in this field, whereby such a paint will serve as a conductor, I should very much like to hear of it.—T. H. G. Michael, Paint Research Laboratory, National Research Council, Ottawa, CANADA.

---

On page 8 of your issue of Sept., 1943, there is an inquiry relative to an electrical-conducting paint. We have supplied a satisfactory material of this type to several of our customers, and would be glad to give information relative to this product to other people who might be interested.—Zapon Division, Atlas Powder Co.

---

On page 8 of Sept. issue, we notice that the Mica Insulator Co. wishes information concerning a conducting finish. With this letter we are sending a communication for the Mica Insulator Co It describes one of our most recent developments and may be of interest to them. — Roxalin Flexible Finishes, Inc.

---

## How Does Fluorescent Light Affect Color?

I would like to know if there has been anything instructive written on the mixing of paints to be used under fluorescent light? We all know that color changes under this light and it seems to me someone should have worked out some formulas for this purpose.—H. S.

---

## Painting Inside Tubes

Please forward more detailed information on the article about, "Painting Inside Tubes," signed by F. M. C. This article is in the Sept. 1943 issue of your magazine, on page 68.—G. E. Co.

---

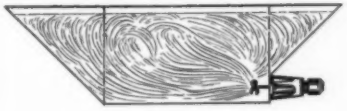
## Striping Tools

Will you be kind enough to advise us a local (Chicago) source of supply on stripers, as we have a customer who is interested in same?—S. C. Co.

---

## Luminous Paint

We are interested in a luminous paint that can be applied or sprayed on jewelry, artificial flowers for the hair, etc.—a coating that will glow



**Agitate Dipping Tanks with "LIGHTNIN" MIXERS**

Here is a way to get dipped finishes that will be certain to meet Army specifications and pass inspection. Use *"LIGHTNIN"* Mixers on your dipping tanks.

This mixer will prevent the settling of heavily pigmented, thin paints so that uniform coating can be constantly maintained.

If mixing or agitation is one of your problems, consult Mixing Equipment Co., Inc., whose mixing experience is yours for the asking.

**Note on Priorities:** All offerings and specifications are subject to such government regulations as may be announced from time to time in connection with critical materials. Immediate shipment on many models and parts.

**MIXING EQUIPMENT COMPANY, INC.**

**1027 GARSON AVENUE • ROCHESTER, N.Y.**

Coating the Bottom of Letter Trays

WITH

Cellusuede

FLOCK

One of the thousand ways in which Cellusuede Flock may be used to make a smooth non-scratching surface and add a colorful touch of quality to the product.

Easily applied to wood, metal, glass, paper or cloth with a spray gun or by sifting. Rayon and Cotton Flocks supplied in one pound bags, twelve to a case, solid or assorted colors. Also supplied in 10 and 50 pound bags. Wide variety of colors.

*Write for Color Card Samples and Prices.*

CP

Cellusuede Products, Inc.

ROCKFORD, ILLINOIS

or be luminous in the dark and yet will not be visible or harmful to the jewelry.

If you have anything that can be used for the above purpose, please send us a sample together with prices on large quantity orders, as we are in a position to use considerable quantities if it proves satisfactory to our purpose. In the event you cannot supply us, will you be kind enough to refer us to another source?—T. I. Co.

## Spray Booth Coating

We are interested to know if there is a material on the market that can be applied to the interior surfaces on spray booths, and which, after a period of time, can be easily removed without scraping. We believe this material comes off like skin or cellophane.—C. M. Co.

Information given.—ED.

## Infra-Red Article

We are advised that there appeared in your magazine, in Sept. 1942, an article on infra-red reflecting paints. We would like very much to procure a copy of this article. Can you help us?—C. Equipment Co.

Extra copy sent.—ED.

## Mechanical Graining; Portable Sander

We just came across an article in your April 1941 issue by William F. Hyde, on mechanical graining. We would like to have some information from you as to where we can get all the necessary details.

We are also looking for a portable hand sander that we can use for sanding in our finishing room, instead of hand sanding, and would like to have you give us names of manufacturers of this machine.—M. F. Co.

Information supplied.—ED.

## Classes on Finishing Need Instructional Aids

We are seeking to secure instructional materials and visual aids for our proposed Wood and Metal Finishing Classes, and are taking the liberty of writing to you with the hope that you might have complimentary copies of catalogs, manuals, charts, news bulletins, 35mm. Slide Films, back issues of trade magazines, or

*(Continued on page 60)*

# STAINS

***What should a stain do*** in order to assure economy in operation, beauty of effect and permanency in results?

★ Is the stain that you are using giving you exactly the results you want?

★ Is it delivering full value?

★ Have you used any of the following

**STILLE-YOUNG STAINS—**

**1481**
**MAPLE PIGMENT**

**3082**
**MAHOGANY PERMA**

**2761**
**WALNUT PERMA**

**2607**
**WALNUT PIGMENT**

**2936**
**WALNUT PIGMENT**

**2956**
**MAHOGANY PERMA**

---

***The Alert Manufacturer*** is never too busy to consider a better product.

## STILLE-YOUNG

MANUFACTURERS: LACQUERS · FILLERS · STAINS · ENAMELS · PAINTS

2300 North Ashland Avenue — Chicago 14, Illinois

# SHELLAC

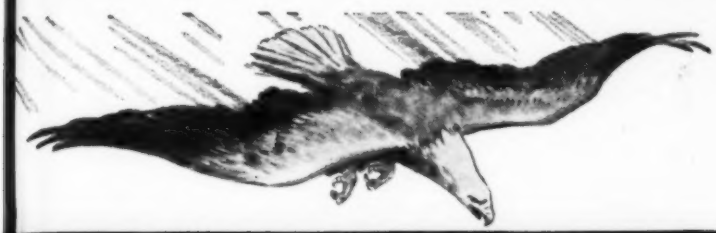
LACQUERS
SEALERS
STAINS • GLAZES
ENAMELS
UNDERCOATS
NOVELTY FINISHES

IN STEP WITH THE TIMES

*Industrial Finishes*
*that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.*

• FOR APPLICATION BY ALL METHODS

JAMES B. DAY & CO., CHICAGO



# "STERLING 1000"

## New Electric Portable Sander

## Tough... Efficient... POWERFUL!

Smooth out operator jitters... and smooth out production problems at the same time—with the "Sterling 1000"... Power to spare, rapid cutting, yet its scientifically engineered, counterbalanced mechanism operates without trace of vibration! Built like a fine watch, but extra *sturdy* and *tough* for a thousand types of production.

**Designed on New Sanding Action Principle!**

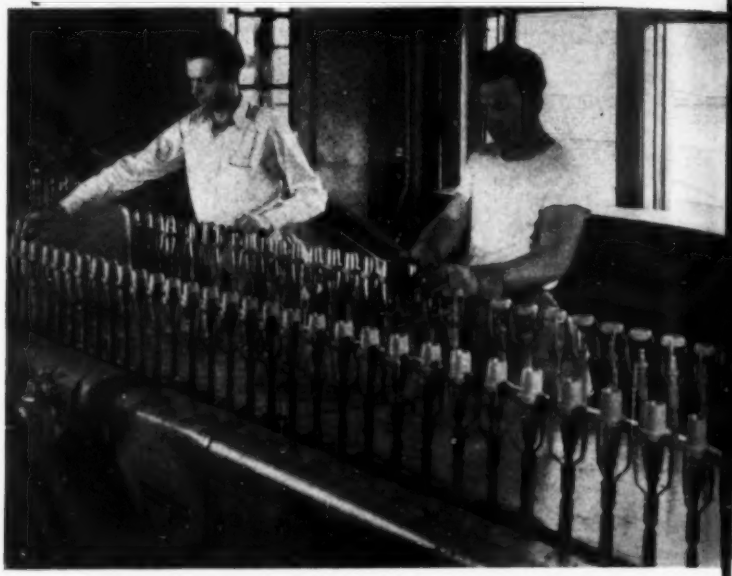
Orbital, circular, thousands of abrasive grains cut furrows which cross and recross each other. With this action, the "Sterling 1000" cuts faster—produces the smoothest surface on wood, metal, plastic or composition. Ideal for many rubbing and polishing operations.

*Write today for your copy of the New "Sterling 1000" folder, describing* 21 important features *in detail.*

**STERLING TOOL PRODUCTS COMPANY**

365 E. Ohio Street, Chicago, Illinois

613 W. Washington Blvd., Los Angeles, Calif. • 74 Wellington Street, W., Toronto, Canada



Here clean shells are placed in workholders and the threaded section of their upturned cavities are masked, preparatory to passage through the booth of a conveyorized automatic spray-painting machine. Capacity, 2,000 shells per hour.

A SMALL but compact set-up for automatically cleaning and spray painting 20-mm. and 37-mm. shells, inside and outside, is in operation in one of the Grapho Products Co. plants in Indianapolis, Ind. It is part of a production line that includes several machining, testing, measuring and inspection operations.

The final cleaning in preparation for painting, and the spray-painting of shells inside and outside—these two vitally important operations are taken care of by two automatic conveyorized machines designed and built especially for this work.

Through the use of interchangeable holders, the automatic spray-painting machine is capable of coating several different sizes of shells, at speeds ranging up to 2,000 per hour.

### Conveyorized Degreasing Effects Thorough Cleaning

Following their passage through a machine that automatically stamps an identification number on them, the shells are deposited at the final degreaser, as shown in one of the illustrations that accompany this article. Here a loader places them, two at a time, in the V-troughs of what might be termed a small cross-bar conveyor built into a degreasing machine. At the front, where the loader stands, the conveyor is descending into the de-

☆ *The High Production*

At this end of the conveyor two girls are stationed (only one appears here) to remove, inspect and pack the shells.

greaser, so the shells first pass through vapor, then down into and through the liquid, and finally up through the hot cleaning vapors again. In this way each shell receives the same thorough cleaning treatment at the same temperature.

As the shells near the top, on the up-moving side of the conveyor, a unique device trips the V-trough that carries them, and dumps them into a chute through which they slide into the spray room. Their immersion in the hot cleaning solution, followed by passage through the hot vapor, leaves the steel shells clean but too hot to handle with bare hands. The heat is held to approximately 150° F. This is essential for the dissipation of solvent and it shortens the drying time to 15 seconds.

The gravity chute from the degreasing machine directs the shells to the loading station of a conveyorized automatic spray-painting machine. This chute is so designed and arranged that clean steel shells, dumped into it from the degreaser, do not strike one another hard enough for any finished surfaces to be marked, scratched or damaged in any way.

The spray machine loader wears clean gloves, not only to avoid burning his fingers, but also to avoid making bare finger contact with the cleaned shells before they are spray-painted. This is important because finger-touch perspiration, with its probable traces of body acid or oil, could be of such character as to destroy the proper adhesion of the air-drying paint or colored lacquer to these smoothly machined shells.

**Automatic Spray Painting, Plus Operation Technique**

The automatic spray-painting machine has a chain-on-edge conveyor traveling horizontally at work-table height. The machine is about 3½-ft. wide by 20-ft. long. The chain conveyor carries 108 spindles (each one carrying a shell holder) spaced at regular intervals. At one of its two hairpin turns, the conveyor passes through a spray booth where automatic movable guns are mounted to spray the outsides and insides of shells. During the spraying of a shell, that shell and its spindle holder are rotated. The spray guns follow the travel of each shell for a short distance; then the spray guns

## Painting of Shells ☆ ☆

snap back to spray the next shell that follows. If no shell is in a holder that moves into position, the guns will not spray the empty holder.

The location of the spray booth at one end of the conveyor loop enables the chief operator to observe all operations at any time by just looking up from his normal job of inserting shells into workholders. A central switch is located handy to the operator so that he can stop the machine quickly in case something goes wrong.

### Four Workers on Automatic Spray Machine

Four people work at the spray-painting machine. First there is the chief operator who wears gloves. He picks up the cleaned shells and places them correctly in the workholders, which are part of the chain-on-edge conveyor. Close to this workman is another man who places a masking shield inside the upturned threaded end of each shell—the end that has the high explosive cavity and which is threaded for a fuse cap. These masking shields are short sections of thin metal tubing. Each one is an easy press fit in the threaded end of the shell and is sufficiently oversize in length to make it easy to press in and take out.

Placing shells in the V-troughs of a crossbar conveyor which carries the shells down through vapor and liquid cleaning solution and upward again through cleaning vapor. An automatic release causes the V-troughs to tilt and release shells at a certain point.

The copper rotating band, at about the mid-length of the shell, must not be painted either. It is effectively shielded by the close-fitting band of the workholder which holds the shell in perpendicular position. So you see, each of the 37-mm. shells has two areas, one inside and one outside, that must be perfectly masked before it enters the spray booth.

These shells have a cavity at each end. The smaller cavity at the "base" is the tracer cavity. This tracer cavity rests on the workholder and is not painted until after the shells leave the spray booth. The larger cavity, which extends deep into the shell, is the high explosive cavity. It is painted with acid-resisting asphaltum-base paint as the shell passes through the booth. This is done by indexing a spray gun over the center of the cavity, and as the spray gun follows the shell it sprays a small round spray of paint that coats all interior surfaces, except the masked threaded section at the top.

The outside of each shell is painted with an air-drying identification colored lacquer which air-dries quickly. Two automatic guns spray the colored lacquer. One gun sprays paint below the rotating band and the other sprays

# VICTORY WRINKLE FINISHES

## *Developed by M&W without* CHINAWOOD OIL

TO conform with government regulations prohibiting the use of chinawood oil in the manufacture of standard wrinkle finishes, our laboratory has developed a complete line of wrinkle finishes without this critical material.

**Victory Wrinkle Finish** gives a uniform wrinkle of the desired pattern in a single coat using ordinary methods of application. Its characteristics are similar to those of our well-known Duart Wrinkle Finish, providing a tough, durable coating which readily covers surface imperfections. It is supplied in a full range of colors. Write for full details.

★ ★ [ *Formula for a Quick "Finish"* **BUY MORE WAR BONDS** ] ★ ★

## MAAS & WALDSTEIN COMPANY, NEWARK, N. J.

*PRODUCERS OF LACQUERS, ENAMELS, SYNTHETICS AND SPECIALTY FINISHES FOR ALL PURPOSES*

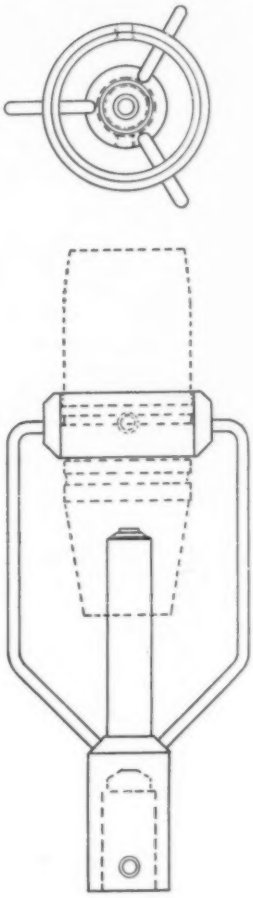
BRANCH OFFICES AND WAREHOUSES: 1658 CARROLL AVE., CHICAGO, ILL. • 1333 W. PICO BLVD., LOS ANGELES, CALIF.

above the band. Low air pressure is used for atomization of the paint. The spray guns operate only when a shell is in the workholder. The guns follow the shells while painting, and return when shut off. An oil cushion prevents the mounted guns from bumping hard as they snap back into spraying position. The shells rotate about 200-rpm. as they pass through the spray booth. This assures a uniform coat of paint being sprayed on each shell. The shells are warm when painted, but this has no ill effects, either on the operation or the final result.

### Spray-Coating the Tracer Cavity; Inspection; Packing

At the point where the spray machine conveyor makes its hairpin turn farthest from the spray booth, two girls are stationed. One of the girls removes shells from the workholders, inspects each one, then places it in an indexed position on a special fixture and presses it down. The operation of this fixture is such that a hidden spot spray gun, with its nozzle pointing upward, sprays only the interior of the tracer cavity in the end of the shell. The work at this point is clean and causes no inconvenience to the workers.

The paint sprayed into the tracer cavity is the same fast-drying acid-resistant black that is sprayed into the high explosive cavity of the shell. The operation is very simple and fast. One quick down and up movement of the shell is sufficient to complete the spraying of the tracer cavity. The girl who does the work at this point then places the completely sprayed shells on a worktable where another girl picks them up, gives them a final quick inspection, packs them in a partitioned paper carton



Top and side views of a workholder which holds shells in position as they pass through automatic spray machine. Dotted lines show a shell in position. The ring that fits around the mid-length of the shell, contacts and masks only the copper rotating band.

*Mechanized dip treatment of helmets in preparation for paint finish*

Deoxidine, a phosphoric acid type metal cleaner, removes rust and rust producers, light oil, oxides and annealing scale, from pits as well as the surface of metal, *creating* a *chemically clean, slightly etched* surface—the ideal anchorage for enduring paint or lacquer finish. Deoxidine meets Army and Navy specifications for cleaning metal prior to painting.

The Deoxidine Cleaning process has been standard for more than a quarter of a century and is adapted to the cleaning of steel, aluminum, aluminum alloys, in fact all metals (except zinc and cadmium).

*Manufacturers of Inhibitors & Metal Working Chemicals*

**AMERICAN CHEMICAL PAINT CO.**
**AMBLER** ACP **PENNA.**

**Note—West Coast Plants may address inquiries and orders for prompt delivery to Leon Finck, Ltd., 720 East 59th St., Los Angeles, California.**

**AMERICAN CHEMICAL PAINT COMPANY, AMBLER, PA.**

*Please send me general Technical Service Data Sheets on*

Name_____ Title_____ ☐ *Deoxidine*

Company_____

Address_____ B-11

DETROIT PUBLIC LIBRARY

and places the loaded carton on a gravity chute through which it slides to the shipping department.

The automatic coating machine was first purchased to paint this one particular type and size of shell, but since that time two other shells of different size and design have been placed in production in this plant. To paint these different shells on the same machine called for the design of new workholders. Only a few minutes are now required to change the set-up on the machine from one type of shell to another. For example, in one change, the larger workholder becomes the base for the small shell workholder. The 20-mm. shell is held by the rotating band that masks it, and the small workholder fits into the rotating band mask of the larger workholder, thereby masking the larger rotating-band mask. Very little alteration of gun positions is necessary when the machine is changed from one size shell to another.

All of those who worked on this idea are to be complimented, as it functions perfectly, not to mention saving the cost of putting in a second automatic painting machine to do the work. The employes of this organization all realize the importance of producing shells for victory and they are doing their part in every respect.

---

## Colors for Safety

RED is traditional in safety practice as a symbol of danger. Yet while it is a rich and exciting hue, it falls short of other colors where high visibility is concerned.

According to the Color Research Laboratory of the Eagle Printing Ink Co., Division General Printing Ink Corp., New York, the most conspicuous and visible of hues is yellow. Next in order is a brilliant yellow-green. Following this, orange ranks third, with red fourth on the list.

In factories a good safety practice would suggest the use of yellow to mark moving parts, trucks, pillars and the like. Yellow-green and orange might be used for other and perhaps lesser hazards—with red reserved for fire-protective equipment. Many factories have developed specific codes of their own, using the magic of color to serve as silent but effective tokens of identity and danger.

Yellow and yellow-green are the regions of highest visibility in the spectrum. In the dim light encountered in so many industrial environments, they are the two colors that hold their brightness best, with red fading out and resembling black—a phenomenon long recognized by science.—HERBERT KAUFMAN.

---

## Notice to All Manufacturers

A number of essential civilian products must be produced in the next year in order to provide the civilian population with items necessary to health, safety, and general welfare. About 700 items are being programmed for production in 1944. It is contemplated that these items must be manufactured in part by small manufacturers with open capacity which have manufactured these items in the past.

It is possible that the district office of the Smaller War Plants Corp. has already communicated with you concerning your possible participation in this program. If it has not, this letter is of vital importance to you. If you are a manufacturer of civilian items which you believe may be included among the essential civilian items referred to above, contact your nearest SWPC office.

We anticipate that a large number of manufacturers will take immediate advantage of the above information and as certain essential steps must be taken to qualify for participation in this program, it is necessary that you act promptly if you wish to participate.—Albert M. Carter, Acting Chairman, Smaller War Plants Corporation, Washington, D. C.

There's nothing mystical about the chemistry of finishes. It's wholly and decisively a matter of **"Know how"** born of experience. We have the experience—years of it—and right now the knowledge gained from that experience is being applied to the problems of military finishes. If you are working with Government specifications we can help you. We have yet to meet the problem we couldn't solve. Give us a ring, at our expense: Phone Pittsburgh, CEDAR 8100, and ask for the Laboratories. Our technicians are always glad to discuss formulas or methods.

**WATSON-STANDARD CO.**

Manufacturers of
PAINTS · VARNISHES · INDUSTRIAL
FINISHES AND LITHOGRAPH COATINGS

FACTORY AND GENERAL OFFICES:
PITTSBURGH, PA. · WAREHOUSES:
BOSTON, BUFFALO, DETROIT, NEW YORK

TOUGH JOB HEADQUARTERS
℞ **Prescription Finishes**
Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

# Machine Tool Finishing

**Case study of how a leading manufacturer of machine tools solved the problem presented by war limitations, in regard to the finish on his products.**

THE strict utilitarian nature of a machine tool is probably its outstanding characteristic. Purely a means to an end, its ability to cut, shave, twist and form metal into usable shapes ranks first in any evaluation. But machine tools are controlled by human beings; consequently, the factor of visual appearance enters the picture.

Sound shop management emphasizes the need of keeping tools neat, clean and attractive, as a means of inducing greater output, higher quality workmanship and improved working conditions. While it is true that a tool whose visible surfaces are marred, uneven and dull does not necessarily produce inferior work, it is just as true that a bright, smooth finish on a drill, lathe or press does create in the operator a sense of pride in the tool's appearance. It is only natural to expect, therefore, that he will be more conscientious about taking care of the tool and seeing that it is kept clean and properly lubricated.

### Former Smooth Glossy Finish Called for Several Coats

This is a fact that has long been recognized by the Cincinnati Bickford Tool Co., makers of heavy-duty radial and upright drills. Cincinnati Bickford technicians developed a smooth, glossy surface

---

(Upper left) Rough grinding the surfaces of a gray iron casting to remove snags, gate marks, seams, rust, etc., before the primer coat is applied.

(Lower left) Smaller castings, used to house gears, are mounted on grilles and moved over a roller conveyor. A liberal amount of priming paint is thoroughly brushed on; it dries in less than 10 minutes.

# Under War Conditions

**BY GORDON H. ROBERTSON**
**The Sherwin-Williams Co.**
**Industrial Finishing Division**

that was capable of being easily wiped free of oil, dirt, etc. The finish was standard machine tool gray, bright, attractive and durable. When received from the foundry, the gray iron castings were ground with carborundum wheels to remove all snags, gate marks, seams, rust, etc. Overhead tramrail hoists then carried the casting to the paint room where it was given a primer coat of paint. Next, two coats of filler were applied with knives to smooth out those surface irregularities not removed by grinding. The filler itself was smoothed by brushing with turpentine and camel's hair brushes.

After a 12 to 14-hour stand, to permit the filler to set and harden, the casting was then sanded and a sealer coat of paint was applied. When the piece had been put through the required machining operations and assembled as part of the completed drill, it was given a final "touch-up" coat. The finished drill had a hard, smooth surface, attractive and easy to keep clean. Consequently, the operator felt encouraged to keep his machine in good working order and the shop took on a neater appearance.

### WPB Restrictions Placed Limit on Number of Coats

With the advent of a tremendous backlog of unfilled orders, however, the machine tool industry, in conjunction with WPB officials, began to cast about for means of speeding up production. All secondary operations were carefully scrutinized and the fine paint job became the first casualty. On April 27, 1942, WPB issued Order L-108 which imposed the following restrictions. First, only one coat of primer or sealer was to be applied. Second, no filler could be applied. Third, not more than two coats of paint, enamel or lacquer

Notice the contrast between the light reflective surface to the left and the light absorbent "pebble" finished surface to the right on this huge casting.

A Cincinnati Bickford upright drill is being given a final spray coat of "pebble" finish to cover those areas that were scratched or marred during shop machining. Surfaces that are to remain bare, are masked during this spraying operation.

could be applied. Finally, no color other than "old machine tool gray" could be used for the final coat of paint, enamel or lacquer.

At first glance, the effects of the order might seem unimportant. As stated before, a finish or the lack of it on a machine tool does not necessarily affect the efficiency of that tool's purpose, which is the shaping and forming of metal. But, in the opinion of the Cincinnati Bickford Co., a rough, unattractive finish seemed to be objectionable. With only a primer and two finish coats of paint, the tool's surfaces showed up crude and unfinished, with even minute

# GET DOUBLE BOND ADHESION

## With This New CBZ (cadmium, brass, zinc) PRIMER

**Are you having trouble in getting good primer adhesion on cadmium-plated surfaces, or on magnesium, brass or zinc? Then try this new Berry Brothers' CBZ Primer. ¶ A product of intensive wartime research in the development of airplane and ordnance finishes, Berry Brothers' CBZ Primer *doubles the adhesion by doubling the bond.* ¶ It contains a chemically active ingredient which "etches" the surface for perfect anchorage . . . mechanically as well as chemically. ¶ It has no progressive deterioration. Some primers adhere satisfactorily for a time but eventually fail. In this new CBZ Primer, age does not cause brittleness. Extended time tests show no deterioration. ¶ Air-dries to recoat in 30 minutes. Oven bakes in 10 minutes at 275°. Infrabakes in 5 minutes. When baking enamels are used, you can air-dry the primer 30 minutes, apply enamel, and bake in one operation. ¶ Berry Brothers' CBZ Primer is truly an outstanding new primer development. Let us tell you more about it.**

## BERRY BROTHERS, Inc.

*Quality Finishes Since 1858*

INDUSTRIAL VARNISHES • ENAMELS • LACQUERS

DETROIT, MICHIGAN • WALKERVILLE, ONTARIO

JERSEY CITY • BOSTON • CINCINNATI • CHICAGO • ST. LOUIS

scratches greatly magnified. The company's executives determined to continue production of their drills with the best finish obtainable under the new restrictions. Accordingly, paint technicians were called in and presented with the problem.

It was almost impossible to remove evidence of surface defects without using a filler. Prolonged grinding consumed too much time and the present glossy finish, which reflected light, served to magnify defects. The most practical course seemed to be the use of a paint that would absorb light and minimize the defects.

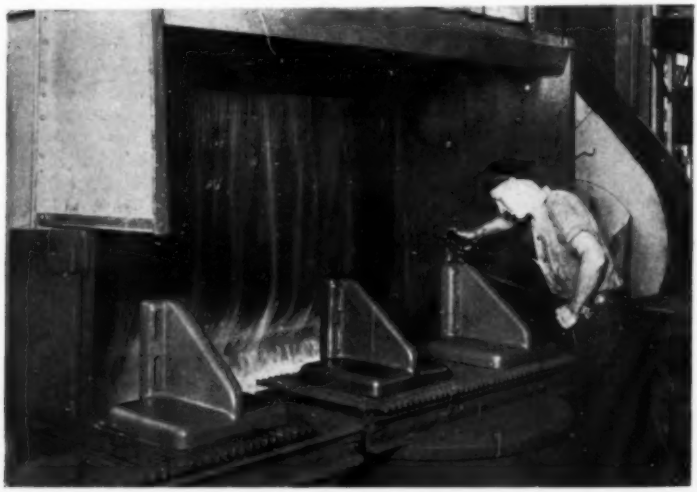
### Pebble Texture Finish Is Developed to Meet Conditions

The technicians recommended a spatter-type or a "pebble" finish which accomplished three purposes. First, it rendered practically invisible all scratches, grinding scars and other surface defects. Second, it added immensely to the appearance of the tool, being a uniform, decorative finish. Third, and most important, after the casting had been roughly ground, only one coat of primer was required to produce an acceptable finish.

So favorably has the new finish been received by users of Bickford drills that the company is seriously considering adopting "pebble" finish or some adaptation of it as standard practice after present restrictions have been lifted.

As the finish is applied today, the practice at Cincinnati Bickford is as follows:

The gray iron casting is given a preliminary rough grinding to remove prominent surface defects. It is then transferred to the spa-



Spraying the pebble finish onto small castings in front of water-wash spray booth. Grilles, carrying two castings, slide over the roller conveyor onto a revolving table, enabling spray operator to paint all surfaces of the casting.

# *IN 1001 INDUSTRIES*

In war industry finishes are more than a beauty treatment. The inexorable demands of war are almost fantastic in their requirements . . . yet they are being met . . . surpassed. Modern finishes . . . many of them still military secrets . . . add new functions, new properties, new possibilities to the products they protect. Wartime finishing experience has already revolutionized many industries . . . has already CREATED scores of new ones. How will this technilogical advance affect YOU? Only an astute examination of your problems in the light of these new facts can tell. It's a job that calls for teamwork . . . and EXPERIENCE. It's a job that should be started NOW . . . while post-war planning is still PLANNING . . . not PLEADING. Your inquiry incurs no obligation. Address The Stanley Chemical Company . . . manufacturers of Stanley Lacquers, Enamels, Synthetics and Japans . . . East Berlin, Connecticut.

*Stanley Chemical*

cious and highly mechanized paint room where the initial coat of primer is applied. This coat is brushed on to insure greater penetration of the paint into the casting pores and cavities. Drying time is less than 10 minutes.

Because their bulk and weight makes frequent handling impractical, large arm and base castings are next sprayed with the pebble finish over a floor exhaust grill. Smaller castings are mounted on grilles which move over a roller conveyor before a water-wash spray booth, where they are quickly sprayed with the "pebble" finish. Drying time here, too, is less than 10 minutes.

After the castings have been machined and the drill is assembled, the complete tool is carefully examined and all spots that have been marred or scratched during machining are touched up. The tool is then given a finish coat of standard machine tool gray. An examination of the illustrations accompanying this article will show how the "pebble" finish effectively covers all major surface defects. Yet it requires from 1/3 to 1/2 less time, effort and materials than the original method.

While successful substitution of one finish for another on a machine tool is not unusual in these days of restrictions and shortages, this case study does contain a lesson for every manufacturer in general and for finishing men in particular. During the pre-war period, when time and materials were freely available, a disproportionate amount of effort was devoted to testing hitherto unknown and untried techniques. But the near miracles now being accomplished by American industrial ingenuity will be long remembered after the present conflict is ended. Industrial finishing techniques, for example, will be thoroughly overhauled. Practices accepted for years as the best and therefore, standard, will be re-examined in the light of the experiences now being accumulated. The results in terms of more attractive and durable finishes should be more than worth the effort.

## Paint Can Vibrators

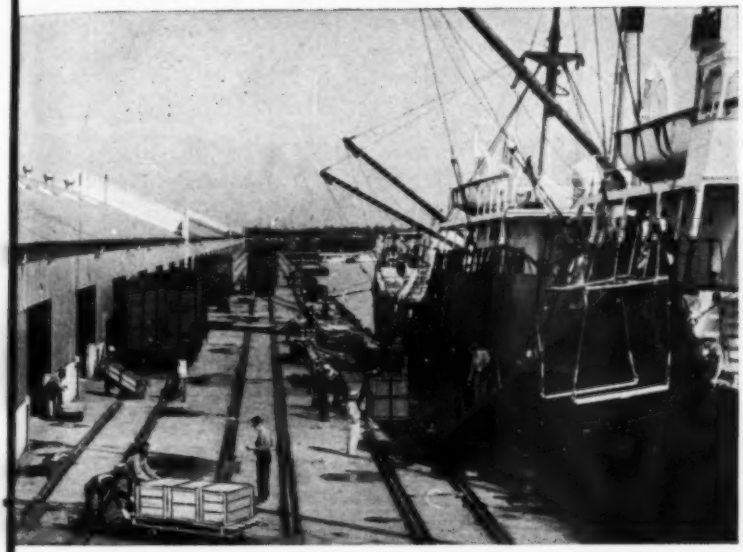
PAINT can vibrators, such as are often used in evidence around retail paint stores for agitating the paint in various types of small cans, are quite often helpful in the finishing room too. They are useful when small cans of different materials are employed for touch-up work and other services where only a small amount of material is involved. These machines really shake the cans. Some of them have a 3-way action.

There is a size to handle cans from 2 to 5 gallons; another size takes care of everything from ½-pint to a gallon, and there is even a little laboratory model that handles sizes from ¼-pint to a quart. The medium-size machine is the one most used. It provides 1350 shakes per minute, and re-mixes the paint in a can in about two minutes.—L. T.

### *Newbery Becomes Sales Manager of Detrex Corp.*

W. F. Newbery has been appointed sales manager of the Industrial Division of Detrex Corp., Detroit, Mich. Detrex Corp., formerly known as Detroit Rex Products Co., manufactures a complete line of metal cleaning equipment and materials.

Mr. Newbery started with Detrex in 1934 as sales and service engineer in the northeastern states, later serving as eastern region manager for several years. More recently he was south central region manager with headquarters at Dayton, Ohio.



# Let's Finish The Axis With Your Product and Permite Paints

EVERY additional shipload of American-made equipment and ordnance material brings closer the finish of the Axis.

With Permite Industrial Finishes, made to government specifications, we have helped many war production manufacturers secure faster drying, quicker application, speedier production. For instance, ammunition manufacturers using Permite Lacquer Enamels have been able to reduce to about two minutes the drying time required for handling after application.

Clear and colored lacquers, zinc chromate primers, enamels, mixing varnishes, camouflage paints, rust inhibitors – all are included in the Permite Line. We also supply Permite Aluminum Paints on WPB allocation.

***Quotations and Technical Information Submitted Promptly Upon Request.***

**ALUMINUM INDUSTRIES, Inc., Cincinnati, Ohio**

**PERMITE** *Industrial* **FINISHES**

Back from the testing grounds, this M-4 tank gets a steam and water bath before going to the painting and drying booths at Pullman-Standard Car Mfg. Co. Photographs by McPherson.

# Painting M-4 Tanks

BY ROY J. QUINN

THE steady flow of armament from America's industrial plants, to back up the great allied invasions of Europe, incorporates some of the most modern of product painting techniques. An interesting example is the painting of M-4 tanks, the American designed and engineered juggernauts which were credited with turning the tide to victory for the allies in north Africa, and which are now driving wedges into Hitler's cracking fortress.

At Hammond, Ind., where these famous tanks are being manufactured by the Pullman-Standard Car Mfg. Co., straight-line painting methods have been designed to keep up with the fast pace the company has set for its assembly lines.

Much of the speed and efficiency developed in painting M-4 tanks at this plant can be traced to experience the company gained through 86 years of building freight and passenger cars for America's railroads. Peacetime methods, of course, were accelerated greatly to meet the demands of wartime production.

For convenience and efficiency in painting, the tank parts are grouped into four general classes. These include numerous small separate parts; the tank basket which fits below the turret; the turret itself, and the tank hull.

### Handling Small Parts

The company makes use of a vast sub-contracting organization to spread the work and to speed production. Sub-contractors manufacture and supply some of the smaller parts, such as ammunition racks, seats, tubing, boxes, etc. Parts received from sub-contrac-

# The Guardsman Way Speeds Up Production of CG-4A Gliders

## *Proved by tests with 5 Manufacturers*

— **Operations cut from thirteen to seven**

— **Man-hours of labor cut from 24 hours, 56 minutes — to 8 hours, 32 minutes**

— **Elapsed time for finish cut from 29 hours, 48 minutes — to 2 hours, 32 minutes**

— **Materials consumed cut from 29½ gallons — to 14 gallons**

These savings in time, man-hours, operations and materials can not be overlooked in the urgency of war production — when every second counts — when every minute saved in production means more needed equipment on the fighting fronts. These production tests made over a period of 90 days with 5 different manufacturers* of CG-4A Gliders confirm the vital job Guardsman Aviation Finishers can do to speed up production.

*Name of manufacturer on request.

**What GUARDSMAN AVIATION FINISHES are doing for others, they can do for you.**

Continuously supplying finishes to Wright Field since 1935.

**GRAND RAPIDS**
**VARNISH CORPORATION**
GRAND RAPIDS · MICHIGAN

Spray painting small parts as they pass through water-wash spray booth.

tors have come to the Pullman-Standard plants in various degrees of protection in so far as surfaces are concerned. Early in the tank program a good many parts came greased, which necessitated extensive cleaning before paintnig. Now practically all parts have a protective prime coating. Parts which will require additional machining, of course, do not have any protective coating.

When these parts are ready for their red oxide primer they are suspended from hooks attached to an overhead chain conveyor, and moved through a spray booth. Upon emerging from the spray booth, and after the prime coat is dry, the parts are sent by trucks to that section of the assembly line where they are installed.

### Handling Large Parts

The tank basket, being a large item, is placed on a portable rack which is about 30-in. high. A separate booth is provided for painting tank baskets. While resting on a portable rack they are pushed in and out of the booth by hand. Elsewhere a crane does the moving.

The tank turrets, which will later receive mounted guns and other armament, have a separate assembly line.

The main tank assembly, the hull, in its early stages on the assembly line, is washed with steam and 'blown off" with air before entering the spray booths. Tank assemblies are primed inside and outside. Then they are moved into a drying oven by power.

### After Road Testing, Final Coats of Flat O. D.

After final assembly the tanks are road tested at the plant. They are brought in and washed thoroughly with water and steam. After a quick dry-off they are prepared for the final coats of paint. The exterior surfaces receive two coats of olive drab flat paint; the interior gets a coat of white enamel. Then follows oven drying. Additional drying and ventilation of the interior are provided by blasts of warm air directed into the turret top after the tank has left the drying oven.

The tank number is stenciled on each side, at diagonal corners of the hull. The inside is lettered with decals (letters ½-in. high) to

# KOCH

**A BIG NAME IN INDUSTRIAL EQUIPMENT**

**KOCH has designed, fabricated and installed complete finishing systems, spray booths, dryers, humidifiers, and conveyors for manufacturers of all types of products. Hundreds of KOCH ovens . . . built from standardized units so they can be delivered quickly and enlarged when necessary . . . are giving dependable service in essential industrial work today. Time after time, nationally known manufacturers have selected KOCH Industrial Equipment over competitive makes. The list includes industries in aviation, plywood, ordnance, foundry, electrical, metal fabricating, and food manufacturing fields.**

**INDUSTRIAL BAKING OVENS**

**FINISHING EQUIPMENT**

**DRYERS FOR WOOD FINISHING**

**CORE BAKING OVENS**

**AIR MAKE-UP EQUIPMENT**

**SPRAY BOOTHS**

**At your request KOCH engineers will analyze your needs and recommend the proper equipment. This service does not obligate you in any way.**

***For Descriptive Material . . . Phone, Wire or Write Today***

GEORGE KOCH SONS, INC.

Makers of *Industrial Equipment*

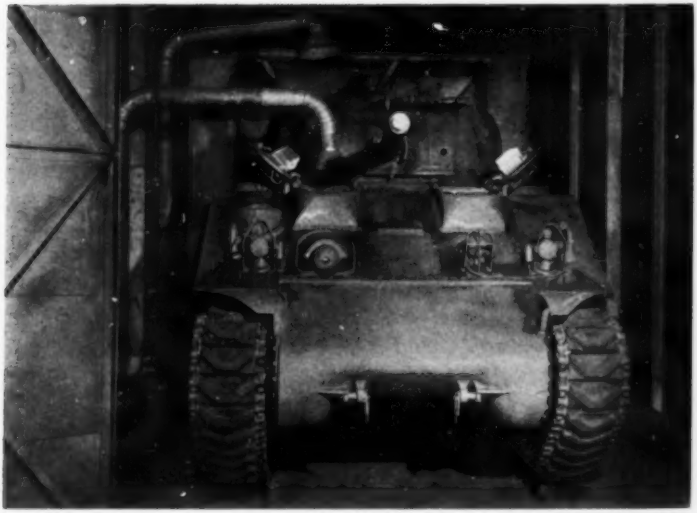
**2118 OHIO STREET, EVANSVILLE 4, INDIANA**

show the location and names of the various items stowed there. When the necessary touching up is done, the tank is ready to go.

Spray booths in the plant are of the water-wash type, which provides a convenient means of gathering the paint particles and depositing them into a tank into which water drains. With the use of a suitable water-wash compound, the paint settles to the bottom of the tank. This residue must be cleaned out at least once a week. It is important to follow directions as to the amount of compound placed in the water tank.

The spray guns are an approved type and, in most instances, they are supplied from pressure tanks. Company technicians have found that 50-lbs. of air pressure at the gun is about right for successful spraying. This is in accordance with present production conditions now prevailing at this plant, for instance such conditions as the product, equipment, materials, methods and general painting set-up. With one or more of these conditions changed, a different pressure might be found to be more desirable. The same applies with reference to the 30-lbs. pressure used in the pressure containers of material.

Some of the smaller items that enter into tank assembly are dip-coated and placed on wire mesh tables to dry. A pan under the wire mesh catches the paint drippings. Paint accumulations on the dipping racks are burned off each week. All paint tanks and drain boards are kept covered when not in use — this in the interest of cleanliness and fire protection.



Ready to roll out of the drying oven, this M-4 tank has received its final coat of paint. Note piping through which air is blown into interior to speed drying.

S

## Rumors of amazing performance of Finish-Baking unit prove true!

**Rumors are flying** about Despatch engineers' sensational development of a new type of finish-baking unit which is now undergoing final production tests.

Keyhole-snoopers report some surprising things in performance. They say it:

*"Slashes baking time"* by several hundred per cent through a tricky new system of heat application . . .

*"Improves quality"* of paints, lacquers, enamels and varnishes in nearly all cases . . .

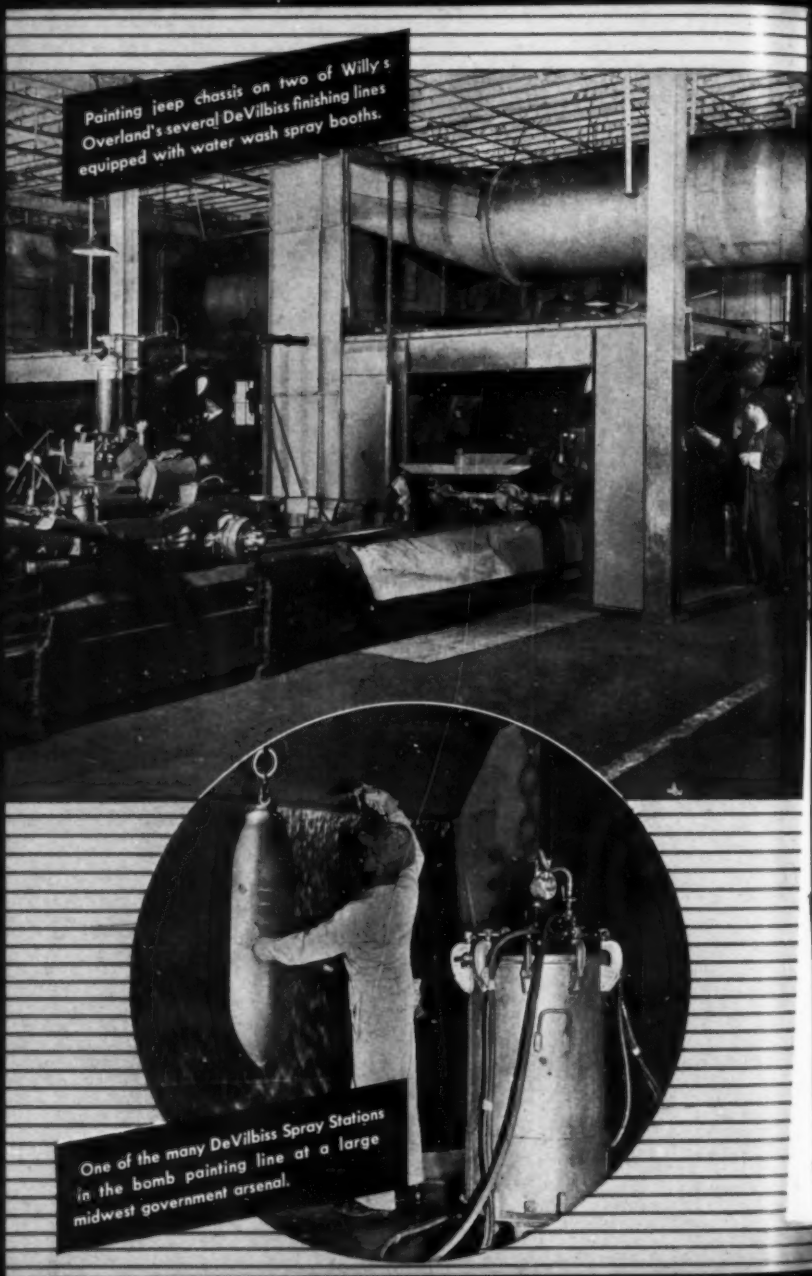
*"Runs automatically"* through new electronic control devices and mechanism; saves labor, assures uniformity . . .

*"Reduces baking costs"* by eliminating rejects, avoiding costly test-runs and using heat more efficiently . . .

**ALL THESE RUMORS ARE TRUE!**

Watch for announcement giving full details and conclusive proof of performance.

**DESPATCH**
OVEN COMPANY MINNEAPOLIS



Painting jeep chassis on two of Willy's Overland's several DeVilbiss finishing lines equipped with water wash spray booths.

One of the many DeVilbiss Spray Stations in the bomb painting line at a large midwest government arsenal.

# *Today's* COAT·OF·ARMS

## *is a DeVilbiss-sprayed finish!*

• Today's Coat-of-Arms is no useless decoration. It is the protective and preservative coating given armament of all types for the Army, Navy, Marine Corps and Air Forces. And because these "coats-of-arms" must be put on so well and with such great speed, they are applied with DeVilbiss Spray Guns.

Two examples are illustrated here. The top view shows how jeep chassis are given a protective finish with high-speed DeVilbiss Spray Systems at Willys-Overland. The bottom photo shows the speed with which the exterior painting of bomb cases is done with DeVilbiss Equipment at one of the Government Arsenals.

These and thousands of other war-working DeVilbiss Spray Systems are products of our 55 years of experience in applying the spray method to specific requirements. Use this "know-how" to improve your finishing speed and quality now and after the war.

**THE DEVILBISS COMPANY • TOLEDO 1, OHIO**

Canadian Plant: WINDSOR, ONTARIO

*PROUD to have won the coveted Army-Navy "E" for excellence in war production, the men and women of DeVilbiss pledge to continue giving their all-out best—for Victory.*

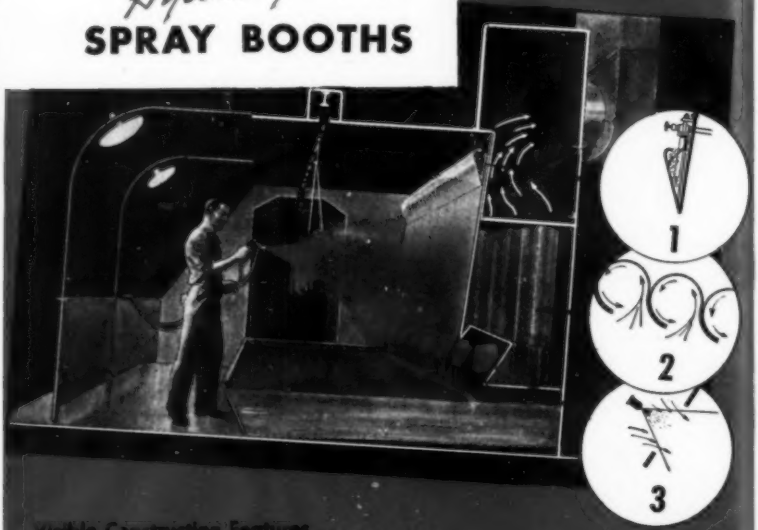
**DEVILBISS SPRAY SYSTEMS**

SPRAY EQUIPMENT • EXHAUST SYSTEMS • AIR COMPRESSORS • HOSE AND CONNECTIONS

You can **SEE**
*the advantages of*

# MAHON *Hydro-Filter* SPRAY BOOTHS

- *Ventilation*
- *Visibility*
- *Accessibility*



1

2

3

**Visible Construction Features . . .**

1 Adjustable reservoir construction of gutter above flood sheet insures an even flow of water over sheet, keeping entire surface clean.

2 Centrifugal eliminators separate all water from air stream. Clean air only is whirled upward to exhaust. Water drops to sludge tank below.

3 Visible high-pressure, atomized water sprays, projected through circular orifices, thoroughly wash exposed from air stream—provide an effective seal against passage of fire.

**Adaptable to ANY PLANT or ANY PRODUCT**

*No matter how large or how small your plant or product may be, the Mahon Hydro-Filter Spray Booth can be adapted to your particular conditions. Mahon engineers design each installation precisely for each specific purpose. They will cooperate to the loving end of your entire spray painting production system.*

THE R. C. *DETROIT* **MAHON** COMPANY *CHICAGO*

Designers and Manufacturers of Paint Cleaning Machines, Rust Proofing Machines, Hydro-Filter Spray Booths, Chemical or Organic Solvent Air Supply Systems, Hydro-Foam Dust Collectors and Many Other Units of Special Production Equipment—including Complete Finishing Systems.

*Here is an article called "Finishes for Civilian Furniture", which has rather general application to finishes for wood products for civilian use. In it I have endeavored to give as definite a picture as possible of conditions in this field, which are confusing to say the least. I believe it will be of some value to your readers. I suggest that you publish it as soon as possible, because the situation changes rapidly.—*

Rollin H. Wampler

Rollin H. Wampler

# What Finishes You Get for Civilian Furniture

INDUSTRIAL FINISHING, in Nov., 1941, published an article called, "How Material Scarcity May Affect New Furniture Finishing," by this writer. With some trepidation, an effort was made to forecast possible finishing materials shortages and their effect on the wood furniture industry. In the main, the forecast has been borne out.

Some materials gradually became scarcer and scarcer and finally unavailable for civilian products. In such cases sufficient warning was given and the furniture manufacturers had an opportunity to test and adopt suitable substitutes. In other cases the shortages developed with devastating suddenness, causing much "weeping and wailing and gnashing of teeth." The purpose of this article is not to extol the author's merit as a prophet, but rather to point out some recent trends in finishing materials and their effect on furniture finishing.

## No More "Non-Critical" Finishing Materials

Some months ago we heard much about so-called "non-critical" finishing materials. Today only the unenlightened use this expression. We are beginning to realize there is a definite limit to the availability of anything, especially when the problem is complicated by processing capacities and manpower shortages. The peace-time philosophy was, "There is plenty of everything for those who can pay for it." The present-day philosophy in civilian manufacturing is, "We'll be lucky to get enough materials and labor to keep going." This change from a buyer's to a seller's market has made profound changes in business practices.

In the article referred to above, the statement was made that furniture manufacturers could take comfort in the fact that their finishing materials suppliers had a wide variety of raw materials to choose from, not all of which would

become scarce or unobtainable. Those of us responsible for making the best possible finishing materials from the best raw materials currently available have seen this choice steadily narrowed down during the past two years, until today we are unable to make certain classes of products for civilian use. In the other products, sacrifices in drying speed and other properties have been made which greatly complicate the finisher's job.

### Who Has What, and Why

To the furniture manufacturer, the picture becomes doubly confusing when he learns that supplier A has available product X for his customers, but not product Y; while supplier B has available product Y but not product X. Such situations are the result of a number of possible factors; they are not a matter of policy on the part of the supplier, or due to his having a "pull" with the proper authorities.

When supplier A runs out of the raw materials for Y and cannot replace them, the customer may be assured that supplier B will soon run out, if he has not already done so. "Shopping around" among competitive suppliers may bring in a few extra drums of a material that the regular supplier cannot furnish, but the furniture manufacturer may be assured he cannot tap an unlimited supply.

### Picture Changes From Month to Month

Further, the picture changes from month to month because many of the chemical raw materials are allocated by the War Production Board on a monthly basis. For a given month there may not be enough of a given raw material available to satisfy even the military demands, while the next month there may be enough for all military needs and part or all civilian demands. Such changes are often unpredictable, and add to the confused situation.

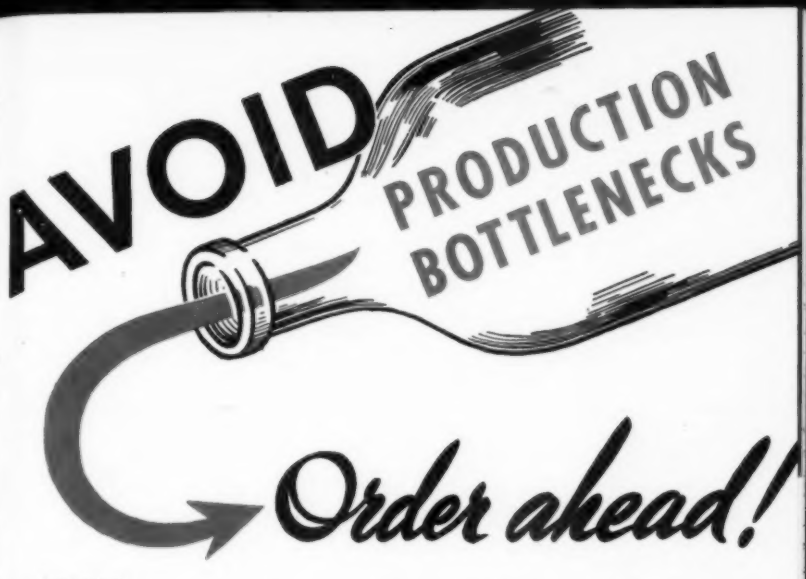
With regard to specific types of materials, we may make a few general observations that might be of some value. They are given in a general sense to indicate the relative availability of the materials and to suggest alternates that are proving useful in industrial practice.

### Stains and Fillers

In spite of temporary shortages in dyestuffs, methanol and other solvents, manufacturers of "civilian end use" furniture, who formerly used non-grain-raising stains, have been able to get their normal requirements of these materials. In a few cases it was necessary to use water stains, but in general the shortage of these stains was not severe.

Lacquer shading stains have not presented a serious problem, in spite of the chronic shortage of lacquer products for civilian use. This is due to the fact that only relatively small amounts are required, as contrasted to the gallonage requirements of lacquer sealers and topcoat lacquers in furniture finishing. Then, too, since the function of these products is purely that of local color application, other means and other materials have been devised for use when the shortage became acute.

Pigment stains have not been restricted by raw materials shortages. Only a far more severe shortage of drying oils could conceivably restrict their volume to any extent. Any difficulties experienced in obtaining them would more than likely be due to the manpower shortage. *(To page 42)*




**Important War Uses of Murphy Finishes**

Airplanes
Radar Equipment
Commando Ramps
Communication Sets
Gas Masks
Gliders
Optical Apparatus
Plywood Assemblies
Range-finders
Ration Cans
Searchlights
Liberty Ships
X-Ray Equipment
Shells
Cargo Trucks
First Aid Boxes
Propellers
Gunstocks
Sterilizers
Gun-fire Controls
Navy Lockers
Sound Detectors
Army Locomotives
Ammunition
High-precision Instruments
Machine Tools

*Allocation requests* to use critical raw materials, necessary to practically all protective coatings, must be filed by manufacturers of finishes with the W.P.B. on specified dates the first two weeks of each month. These requests cover orders to be shipped the following month, and must be filed even though the manufacturer may have the raw material in stock.

Though allocation requests are based on orders received as well as anticipated business, the scarcity of raw materials has recently resulted in authorization being granted *only for orders actually on hand.* End use, of course, must be sufficiently important to justify release of the raw material.

From this you will see that the receipt of your order by the ***1st of the month,*** enables the manufacturer to include your requirements in that month's allocation requests. Failure to meet this time schedule may mean a full month's delay.

Orders should specify end use, contract number, specification and priority data, delivery date, etc. In this way we will be able to give you the best service possible.

**MURPHY VARNISH COMPANY**
**NEWARK SAN FRANCISCO CHICAGO**

**MURPHY *Protective* COATINGS**

"...WE MUST ABANDON EVERY CONSIDERATION EXCEPT INCREASING PRODUCTION AND INCREASING IT EVERY DAY..."

KEE

ND FOR A BINKS
ATALOG-DATA BOOK

BINKS MANUFACTURING CO

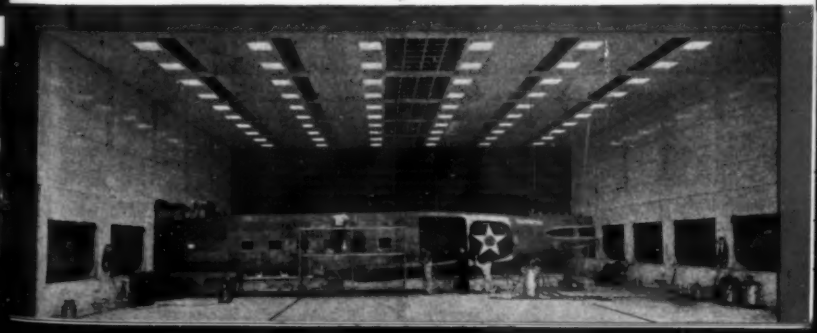
3114-40 CARROLL AVENUE, CHICAGO, ILLINOIS

NEW YORK - DETROIT - SAN FRANCISCO - PHILADELPHIA
CLEVELAND - PITTSBURGH - ST. LOUIS - MILWAUKEE
BOSTON - LOS ANGELES WINDSOR, ONTARIO, CANADA

Says
DONALD
M. NELSON

## KEEPING FINISHING AHEAD OF ACCELERATING PRODUCTION

There are new spray painting techniques and equipment to keep finishing departments abreast of the whirlwind speeds being developed in America's great war industries. New products, made by new methods, are getting new finishes at speeds that were never heard of before the war. Both manual and automatic finishing has been stepped up to the vast scale of war production. As in peacetime, Binks Engineers have been prominent in these wartime developments. They have developed special equipment for finishing shells, bombs, tanks, jeeps and the vast amount of other equipment needed to win the war. The large manual finishing department shown above and the giant water wash spray booth shown below were both designed and equipped by Binks for one of the largest aircraft manufacturers in the country. There is a Binks Engineer in your territory now. He will be glad to show you how to keep your finishing abreast of new production speeds.



As with pigment stains, only a severe shortage of drying oils could conceivably restrict the production of fillers below that necessary to fill ordinary requirements of the trade. Also, difficulties in their procurement would spring more from the productive capacity of the suppliers than any scarcity of raw materials.

### Wash-Coats and Sealers

A severe shortage of lacquer products for civilian use has largely eliminated lacquer sealer for civilian furniture. A number of lacquer-like replacements have appeared. Some furniture manufacturers have returned to the substitute shellac of former years. Limited supplies of this are available. When present stocks are exhausted, as they may be by the time this appears in print, other substitutes will have to be found because the basic ingredient of this product comes from the East Indies.

Shellac has been unavailable for use on civilian furniture for a long time. A number of replacements for white and orange shellac have appeared on the market. Some of them have proved very useful. They are used for wash-coat work and as sealing and building coats where shellac was formerly used.

Special wash-coat sealers, which have been developed for the purpose of replacing lacquer-sealer lacquer thinner combinations, widely used in the past, are much more freely available than lacquer products.

Some furniture manufacturers are turning to the old pigment primers so widely used about 20 years ago. Some of these dry rapidly enough to sand and recoat in one or two hours; others must be dried overnight.

### Varnish Sealers and Substitute Lacquer Sealers

So-called varnish sealers are made on a varnish or resin base and are designed to sand and recoat in from 1 or 2 to 18 hours.

As we have indicated previously in this article, lacquer-like replacements for lacquer sealers are appearing. These products offer promise of being the best lacquer sealer substitutes yet available. In odor, appearance, and working qualities they clearly resemble the conventional lacquer sealers. They will not be available in large volume because their raw materials are the more freely available lacquer raw materials.

In lacquer products for civilian use the real bottleneck is nitrocellulose solvents. For the past several months the War Production Board has allocated none in volume for civilian end use products. Nitrocellulose, resins, and plasticizers are available in reasonable quantities. Until the solvents are available in sufficient quantity that they can be allocated for civilian furniture end use, the squeeze in lacquer products will not be eased.

### Clear and Flat Lacquer and Varnishes

The shortage of lacquers has forced most manufacturers of civilian end use furniture to turn to varnishes and other slower-drying topcoat materials. Oleoresinous varnishes are now available for all uses, although the choice of raw materials from which to make them has been greatly narrowed. Also, paint and varnish manufacturers are severely limited in the amounts of drying oils they may consume. Drastic oil-conservation measures have been made necessary.

The varnishes available are slower drying and, as a general

Many a vital "machine of war" never sees a combat zone. Yet such machines as the farm feed grinder shown here, are just as essential to victory as any machine in battle.

Today much "home front" machinery (much war equipment, too) is painted with Johnson's Wax-O-Namel. Farm equipment manufacturers prefer Wax-O-Namel because it has solved many a production problem. It insures a minimum of repaints, and really performs in service. Wax-O-Namel can be efficiently applied by spray or dip and can be baked in either conventional ovens or infra-red curing banks. (There is an air-dry Wax-O-Namel for farm machinery, too.) The finish is uniform, hard and has remarkable ability to resist farm service abuse.

If you make equipment for the war or for the home front, you should know more about Johnson's Wax-O-Namel. Write for further information.

*BACK THE ATTACK—WITH WAR BONDS*

**TODAY** Wax-O-Namel provides extra protection for implements of war.

**TOMORROW** Wax-O-Namel will provide extra protection and improved appearance for peacetime equipment.

S. C. JOHNSON & SON, INC.
PRODUCT FINISHES DIVISION
Department IF-113
Racine, Wis.

# *The case of the WIND-RL*

## WRITE OR WIRE THE DU PONT WAR SERVICE MEN OR M

☐ *How to speed output and save materials*

Handy pocket-size, fully illustrated booklet, *"Hints on Wartime Finishing Economies."* Shows you 11 points to check for greater efficiency and speed on your war contract finishing schedules.

☐ *How to meet emergencies and solve problems*

Check here for the help of Du Pont War Service Men—skilled "trouble shooters" to straighten out "kinks" in your finishing system *before* or *after* the trouble occurs. Their "know-how" is at your disposal on any war contract finishing. Write about your trouble. Or wire in case of emergency.

# D-BLOWN BULLET-BOX

## . . . Or How a Du Pont War Service Man Passed the Box that Passes the Ammunition

"Satisfactory appearance" is only one of many requirements in most finishing specifications, and yet sometimes it can prove to be a real stumbling block.

Take the case of the manufacturer of ammunition boxes . . . those miniature arsenals where bullet-belts are stored, ready to be fed into machine guns. The boxes were enameled in a dip tank, and everything was apparently as it should be.

Yet, when the boxes came off the finishing line, the finish was marred by noticeable sags. A Du Pont War Service Man was called in at once. An expert on finishing problems, he spotted the trouble in short order. Here's what he found:

As the boxes rose from the dip tank, they were met by a draft of air. This quickened the setting of the enamel and prevented complete draining. Later, when they neared the oven, the heat reduced the viscosity of the applied film. Hence the sags.

The Du Pont Man's solution was simple. He stepped over to a nearby window and closed it . . . cutting off the draft. From then on, the enamel drained to the right film thickness before reaching the oven, and the finish is now satisfactory in every respect.

Looking back, this problem seems easy. But many such trouble-makers are visible only to a trained observer. Thorough training and experience qualify every Du Pont War Service Man as a finishing trouble-shooter. Call on the one in your district whenever you need him.

E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington, Del.

**BUY MORE WAR BONDS!**

DU PONT
REG. U.S. PAT. OFF.

**BETTER THINGS FOR BETTER LIVING**
***. . . THROUGH CHEMISTRY***

**MEN OR MAIL THIS COUPON!** E. I. DU PONT DE NEMOURS & CO. (INC.) FINISHES DIVISION, WILMINGTON, DELAWARE

*mergencies*
*lems*

of Du Pont
led "trouble
out "kinks"
m *before* or
urs. Their
disposal on
hing. Write
Or wire in

**SEND THIS ENTIRE COUPON TO:**
E. I. du Pont de Nemours & Co. (Inc.)
7150-K, Du Pont Building
Wilmington 98, Delaware

NAME_____

FIRM_____

ADDRESS_____

*(This coupon good only in the U.S.A.)*

rule, have less resistance to water, alcohol and alkali solutions than those made some time ago. These changes have been brought about as a result of the restrictions on raw materials. Linseed oil is about the only drying oil available in reasonable volume for civilian use. The resins are limited to natural resins and a few synthetic resins of comparatively low melting points. The resulting varnishes do not have as good through-drying properties as those formerly made and may show some after-tack. However, when thoroughly dry, these films form tough, durable finishes of good quality.

The changeover to varnishes has lengthened finishing schedules in many cases. This delay has not operated to restrict production, since raw materials and labor shortages have been the real limiting factors.

**Synthetic Finishing Materials**

The distinction between "synthetics" and other finishing materials has never been sharp, and has all but disappeared. As a matter of fact, practically every finishing material contains some synthetic ingredient. However, the term "synthetic" has taken on a somewhat narrower meaning in recent years, referring to a product containing significant proportions of such synthetic resins as phenolics, maleics, alkyds, and ureas.

All of these resins, with the exception of ureas, are now largely restricted to military requirements and to essential civilian use. Other synthetic resins have been developed which, while not having all the desirable properties of the materials they replace, still make possible good quality finishes. However, as a good substitute becomes available, and its merits become known, demand quickly exhausts the supply and the consumer is put in the position of seeking a substitute for a substitute for something else.

No chronic shortages of pigments for use in enamel finishes for furniture have developed, although some pigments have been hard to get from time to time. Shortages of primers and enamels have developed more from scarcities in the clear vehicle or binder rather than in the pigments. Lacquer primers and enamels for civilian furniture have had to be replaced by slower-drying types, sometimes at an advantage in the cost, which somewhat compensates for the slight extra cost of a longer finishing schedule.

White synthetic enamels have, in some cases, been replaced with substitutes at a slight sacrifice in color because the pale, non-yellowing vehicles became unavailable.

Users of small quantities of finishing materials may, by judicious buying, obtain ample quantities of materials which others find unobtainable in quantity. *But the large volume user may as well face the fact that we are living in an economy of scarcity, and that he cannot tap a source of unlimited supply of anything free of restrictions of any sort.* Shortages tend to become cumulative. The bald fact is that free and unhindered manufacturing of any civilian product is "out" for the duration of the war. However, civilian manufacturing still exists in surprising volume, and as the purchasing agent for one furniture manufacturer remarked, "It is remarkable when you consider shortages of materials and labor, how civilian industries can continue to turn out great volumes of products. It's a tribute to American ingenuity."

# Reliable NON-CRITICAL FINISHES WITH LACQUER SPEED

## RE-LI-LAC
SEALER

SPRAYS SMOOTHLY
DRIES QUICKLY
SANDS EASILY
CAN BE GLAZED
GOOD HOLD OUT
GOOD CLARITY
TOUGH—DURABLE
ECONOMICAL

## TUF-TEX
FINISH

VARNISH BODY
HANDLES IN AN HOUR
RUBS OVERNIGHT
POLISHES OR DULL RUBS
CLEAR—TRANSPARENT
FULL GLOSS OR SATEEN
NON SHRINKING
HARD—TOUGH—DURABL

Send us your present finishing schedule with an order for 5 gallons or a drum. If you are not pleased, return unused portion and get your money back.

"RELY ON RELIANCE"

RELIANCE VARNISH COMPANY, INC., LOUISVILLE, KY.,-CHICAGO,

# Merry-go-Round Coats and Bakes Relay Coils

**Specially-built machine power dips and bakes the insulating varnish on electric coils. It effects a big saving in labor, avoids wastage of varnish and gives uniformly high quality protective coating and drying.**

BY H. H. SLAWSON

C. P. CLARE & CO., Chicago manufacturer of electric relays, has developed an unusual "merry-go-round" device for use in applying and baking the protective coatings used on its products. What the company is using now is a decided improvement over the procedure previously followed. Perhaps this will suggest an idea that can be utilized in connection with the application and drying of coatings on certain other products.

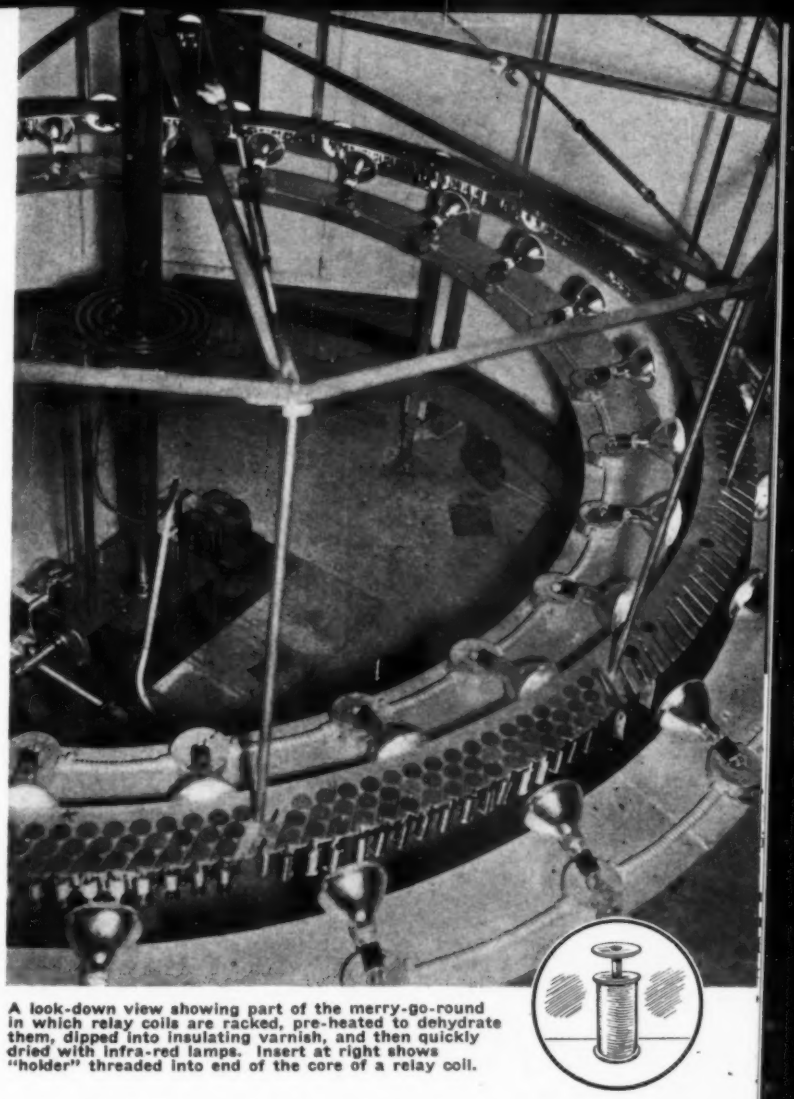
The relays manufactured by this company are used for automatic controls on military equipment and for signal apparatus; also for communications systems. Large numbers of them are used. Each assembled relay includes a wire coil consisting of a large number of turns of insulated copper wire wound on a magnetic core. These relay coils resemble spools of thread; they vary in length from 1-in. to 3-in. or 4-in.

### Severe Requirements Imposed on Coating

In military use the relays must withstand extremes of temperature and moisture, hence rigid manufacturing standards are set up and maintained to insure their functioning in the face of unfavorable conditions. Contributing to their durability and general resistance to various deteriorating influences, is the final protective coating of varnish which serves to prevent moisture from penetrating the coils, and which guards their outer surfaces against damage from various contacts.

Centered in one end of the core of each completed coil is a threaded hole that must remain free of varnish. This fact has been taken advantage of in a rather ingenious way, in connection with dip-coating and drying the coils. A holder or fastener was devised to thread into this hole. It is a short rod threaded at one end and having a flat disc-like head at the other end, as shown in the accompanying illustration. When the holder is threaded into the coil, the resulting assembly can be slipped into one of the slots in the big annular dipping rack, as illustrated.

By a former but now discarded procedure, after the holder had been inserted into the threaded



A look-down view showing part of the merry-go-round in which relay coils are racked, pre-heated to dehydrate them, dipped into insulating varnish, and then quickly dried with infra-red lamps. Insert at right shows "holder" threaded into end of the core of a relay coil.

hole of the coil, several coils were suspended from slotted bars about 12-in. or 15-in. in length. Then, following a period of preliminary drying, each loaded bar was hand-dipped in the varnish, hung up to dry, and finally transferred, by hand again, to an electrically-

heated oven for baking. It was a slow cumbersome, expensive process—wasteful of time and varnish. In the electric oven, blistering and bubbling of the coating occurred on some of the coils due to the difficulty of applying uniform heat to each coil.

### Developing Better Way to Apply and Bake Coating

Although the system worked, the possibility of improving it was clearly indicated. Accordingly, the company's electrical engineer, Mr. A. F. Horlacher, became interested in developing a better way to do the work. Preliminary tests were made with infra-red drying lamps, with results indicating that a rapid and thorough baking could be obtained. "Our next step," Mr. Horlacher says, "was to determine what kind of mechanical set-up would do the job in the easiest and cleanest way. At first we considered several types of chain conveyors passing through a tunnel of lamps, but the possibility that dripping varnish would gum up the equipment decided us against it."

What was necessary, he finally decided, was a means whereby the flow-off varnish and drippings would return directly to the dipping tank before the loaded conveyor began its baking cycle. The problem was ultimately solved by designing the "merry-go-round", which is now functioning to the complete satisfaction of all concerned.

### Ring-Shaped Dip Tank; Rack; Infra-Red Lamps

It includes an annular (ring-shaped) dipping tank located near the floor, and an annular dipping rack which, after its load of coils are dipped into the varnish, automatically lifts and begins turning in a circular path directly above the dip tank and between two rows of infra-red baking lamps. A total of 50 infra-red lamps (each 250-watt) are positioned on two narrow, concentric, annular tables. The tables and lamps remain stationary, although the position of the lamps can be adjusted to some extent.

The dipping rack, which is 12-ft. in diameter, and in level position, is arranged to move down and up, and to rotate on a central axis. It is suspended by a substantial framework which, in turn, is centered on a perpendicular shaft.

### Down and Up Movement Plus Slow Rotation

In designing the apparatus it was necessary to provide movement in two directions for the level washer-shaped rack that holds the coils. First, it had to be capable of being lowered into the dipping tank and raised again to align the coils between the inner and outer rings of infra-red baking lamps. Second, it had to be capable of being rotated slowly in a horizontal plane between the two rows of facing lamps, during the baking cycle. To provide power drives for these two different movements, two separate motors are employed. The selection of movement is obtained by means of two solenoid clutches operated by push buttons. All elements are so interlocked with relays that correct operation is practically insured.

A limit switch, minutely adjustable, controls the down movement of the dipping rack so that all of the coils are immersed to just the correct depth for the right length of time to insure proper application and penetration of the varnish. As the rack is lifted from the dipping tank, another limit

# THAT MEN MAY SEE, WITHOUT LIGHT..

FERRO-LUCIPHOR*
LUMINOUS PAINT

*Luminous paint has gone to war.* It guides o troops through exposed areas . . . speeds t movements by night that make daytime vi tories possible.

Thanks to Ferro-Luciphor* Chemists, lun nous paints today have greater stability a brightness of glow. And, while developed f war, they should have many new peacetir uses: in industry; in the home; and along o streets and travelled highways.

Ferro-Luciphor Luminous Paints are ma by the originators of "Vedoc". Write tod for full information!

*Reg. trade-mark U. S. Pat. Off.

LIQUID PLASTICS DIVISION
FERRO ENAMEL CORPORATION
CLEVELAND, OHIO

switch halts it when the coils reach a center alignment between the two concentric banks of lamps.

**Varnish Storage Tanks; Pump in and Pump Out**

Two storage tanks in a corner of the room hold the insulating varnish, which is released into the dip tank when needed. When the apparatus is to be out of service for a few hours or more, the varnish can be transferred from the dipping tank to the storage tanks by a motor-driven pump. This transfer of material back into the closed storage tanks stops the evaporation of varnish solvents when the dipping equipment is not in operation.

After the "merry-go-round" was completed and proved to be satisfactory by tests, walls of fire brick were built up around it so as to isolate it from the remainder of the plant. The room has only two doors—one through which loads of coils are brought in and taken out, and the other to give access to the apparatus for adjustment and maintenance. From the time the coils are loaded onto the rack until they are removed, the operation of the "merry-go-round' is controlled entirely by push buttons located outside the room.

**Safety; Ventilation; Dipping and Baking Cycles**

Heat from the infra-red lamps and fumes given off during the baking cycle are exhausted to the outside of the building by a fan near the ceiling. This forced ventilation provides a complete change of air every two minutes and makes it certain that any inflammable vapors will be carried away promptly, and that workers elsewhere on the premises will experience no danger or discomfort.

Some experimenting was necessary at the beginning to determine suitable lengths of time for the dipping and baking cycles. The various adjustments made included placing the infra-red lamps closer to and farther away from the dip-coated coils to determine the shortest baking time permissible without the possibility of any blisters or bubbles forming in the varnish coating. As to the time cycle and temperature for baking, the supervisor declares that "it is necessary to bake the coils so thoroughly that the varnish will not soften in service."

One primary merit of this automatic dip-coating, infra-red baking, merry-go-round, is the substantial reduction it has made in labor costs for the operations involved. Comparative figures on output are withheld from publication, but it is obvious that any automatic system that dips and drains a large number of small products at a time, and which quickly transfers them to the baking process, with no intermediate handling, can be operated at much lower cost than when the same steps are performed by manual labor, handling a few pieces at a time. Roughly figured, the management declares that this equipment has enabled the organization to triple production, and to reduce labor cost to between one-half and one-third of what it was formerly.

**Dry Coils Before Dipping; No Waste; Uniform Coating**

No cleaning operation is required before the coils are dipped in varnish, but it is vitally important that all traces of moisture be removed from the coils before they are dipped. For accomplishing this, the penetrating heat of

# HIGHLIGHTS

**A new finish . . . a different finish . . . a finish that highlights the individuality of your product? Is that what you want? Our Creative Studio is maintained for the sole purpose of solving finishing problems for manufacturers. Our experts originate ideas for new finishes . . . then translate those ideas into stain, lacquer, paint . . . into finishing schemes that are distinctive and beautiful to behold. We invite reputable firms to use this service without cost or obligation.**

*Rockford finishing materials for war products are fulfilling all Government specification requirements*

*No Tampering with Quality*

ROCKFORD VARNISH *Company*
ROCKFORD, ILLINOIS

*Manufacturers of Protective and Decorative Coatings*

infra-red drying lamps is ideally suited. Accordingly, this dehydrating operation is performed by rotating the loaded rack between the lighted bulbs just before the dipping operation begins. Results have proved this procedure to be highly satisfactory.

Dip-coating by this machine has another economical advantage in that there is no waste of varnish. The almost spotless condition of the floor in the room gives convincing testimony to the fact that this method of draining the flow-off and drippings of excess varnish is cleaner than by any hand-dipping process.

### Advantages of Merry-Go-Round Dipping-Drying Machine

The chief benefit derived from using the "merry-go-round," however, is the improved product now being turned out. The limit switches, as explained previously, make it certain that all coils are dipped to the same uniform depth, which is something that was not positively certain with hand dipping. Exact control of the infra-red heat insures rapid uniform baking. Surface bubbles and blisters are no longer a problem.

The machine can be easily adjusted to take different sizes of coils, using wire of different gages and different types of covering, and to vary the time cycles for dehydrating, dipping and baking, independently of each other. These characteristics will be recognized as making for flexible operation, which is especially valuable where the handling of large quantities of small products is involved.

Summing it up, Mr. Horlacher remarked that the development of the machine has "considerably simplified a rather difficult operation in our plant."

## Freight Car Cleaning and Painting

WITH the demands for clean box cars increasing, a number of railroads have been required to provide additional facilities for cleaning the interiors of these cars. The most common method of cleaning appears to call for the use of alkali solutions. Many other methods are also used, such as sand-blasting, live steam, flame torches, chopping off the surface with adzes, the use of oil-proof paper, and sealing over spots with a specially prepared paint.

The results obtained by the use of alkali solutions, followed by flushing and scrubbing with water, have been fairly successful, depending on the depth that any objectionable oil has penetrated into the floor. Some railroads use common soda ash; others use materials furnished by commercial cleaner manufacturers. Some cleaners appear to give better results than others, depending on the formula used, and how bad the objectionable spots are.

The average cleaning mixture is 6-oz. of powder to a gallon of water, prepared in 50- to 100-gallon receptacles. This solution is applied over spots on the floor by broom, and it is well brushed; or the powder may be sprinkled over the spots first, and then followed by the liquid preparation afterward.

When the dry powder is used, cars are usually flushed out first and then completely scrubbed and rinsed with clean water from a hose, with pressure when possible. Cars that have contaminating odors—and if these odors do not disappear after the regular washing—are usually given a second treatment with a sanitary cleaner

# FIREWORKS "FINISH" for Berlin and Tokio Starts here!

Coating Incendiary Bombs at Evans Case Co.

THE problem of applying a uniformly high quality protective finish to both the interior and exterior of incendiary bombs—with important savings in time and labor—is effectively solved by Paasche Aircoating equipment. The Semi-Automatic Unit at the extreme right is used for applying oil to interior surfaces — an Automatic Airbrush, mounted on a pneumatic cylinder, plunges the gun deep into the interior and sprays as it moves upward. At the same time, another hard-to-reach cavity is coated by means of an Automatic Airbrush on an ingenious mounting.

The exteriors are lacquered by the Paasche Automatic Airpainting and Drying Machine shown at the left. Just another example of how Paasche speeds finishing operations.

If you have a special—or regular—coating job, Paasche can supply the equipment to apply that coating with speed and efficiency. Call on Paasche.

*Write for detailed information. Paasche Airbrush Co., 1917 Diversey Parkway, Chicago, Illinois.*

Paasche AIRPAINTING EQUIPMENT

(powder form) applied in the same manner as the ordinary cleaner. In most cases this treatment removes the foul odors and further assists in helping make a cleaner car.

One of the chief objections to the use of strong alkali solutions with water, is that they destroy the paint on the steel sides. Alkali solutions also bring about deterioration of steel parts with which they come in contact; and water, soaking into the floor and nailing stringers, causes the wood parts to decay more rapidly.

Another objection seems to be that after the expense of cleaning cars by this method, we find a number of them still unfit for the service for which they have been cleaned, due to the failure of the cleaning compound to remove grease, oil spots or odors. The greatest difficulty has been with such commodities as sugar and flour in sacks, which are loaded quite warm into the cars. On account of the heat, the moisture and odors from floor spots are drawn up into the contents of the sacks located immediately over or near such spots.

The flame torch has been used quite extensively by some railroad maintenance crews, but this method is objected to by the management of most railroads because of the fire hazard.

I have now covered different methods used in removing oil and grease spots from freight car floors.

In recent years some paint and varnish products have been introduced by various manufacturers, and these protective coatings are now being used to seal the oil spots in the wood and thereby prevent moisture and odor from rising into the lading. These sealers can be brushed or sprayed, as the condition demands. They are clear or colored to the shade of new wood. With these new sealers we are now able to eliminate most of the oil spots and odors.—F. M. DAVIS.

---

Looks like here is a good reason to treat and finish the floors of new cars so they will effectively resist anything spilled on them. —ED.

---

## Abrasive "Spirabands" for "Smoothing" Jobs

OF ALL the coated abrasive specialties developed for smoothing various shaped surfaces, the "Spiraband" is undoubtedly the most universally used, both as to industry and operation. The demand is expanding constantly and the types of work to which it is adapted seem to have no bounds.

"Spirabands" are sleeves of coated abrasive cloth wound spirally

A few "Spirabands" of abrasive for use on small drums and spindles.

# "SPEC" COATING

## With a Distinct Egyptian PLUS

Every specification finish we make meets Government requirements to the letter... but that's only one point. There's a *plus* in an Egyptian "spec" finish, an *extra value,* which shows up in handling and in results.

• AXS 946 •

For example AXS 946, a rust inhibiting primer for a wide list of ordnance items...

Brushed, sprayed or dipped, it covers bare metal with an extra-smooth, red-brown, corrosion-resistant coat which takes the final finish beautifully. Dries evenly and quickly.

For your products today—and tomorrow—an Egyptian Finish offers important plus value.

★ ★ ★

*Special correspondence on finishing problems is invited.*

Egyptian's new U. S. Government "Spec" Book—4th Edition—is ready. It's helpful and it's FREE. Send for your copy. Please address Dept. A-11

**THE EGYPTIAN LACQUER MANUFACTURING COMPANY**
ROCKEFELLER CENTER, NEW YORK 20, N. Y.

EGYPTIAN FINISHES

EGYPTIAN
SUPERIOR FINISHES

and glued to a plain cloth liner which is also spirally wound, simulating the form of a mailing tube. One supports and reinforces the other. There is no overlapping of the abrasive material; hence a well-balanced, smooth-running abrasive band of great strength, and capable of withstanding high speeds.

"Spirabands" of Metalite (Alundum) cloth in the smaller sizes are used principally with portable tools or flexible-shaft equipment for removing burrs and tool marks along edges, or from flat or concave areas of short radii; for smoothing up the raw edges on drawn, stamped or sheared metal parts; for shaping dies of every description. They are designed for both grinding and polishing.

The character, shape or size of the work may make it more convenient to handle the part rather than the tool. It is not unusual to mount a portable tool in a fixture or vise. In fact, many types of work can be done with greater accuracy by this arrangement. Many plants have set these small tools up in batteries along benches where great quantities of small parts can be most conveniently handled.

The selection of band (or sleeve) sizes depends on the type of work or shape of the surface to be finished. There is a standard expanding rubber mandrel for every klisted Spiraband size. The rubber mandrel sleeve, in addition to holding the "Spiraband" firmly in position, provides a cushioning effect which prolongs the life of the abrasive and improves the quality of the smoothing job.—*I. L. Burrows, Behr-Manning Corp.*

Hand spraying front of an M-4 tank.

## Letters from I. F. Readers

*(Continued from page 8)*

other materials that describe your finishing aids, or other related finishing data.—James Dawson, Educational Supervisor, Sing Sing Prison, Ossining, N. Y.

### Metal Dyes

On page 38 of your Sept. issue, you tell of metal dyes. I wish to know where these dyes can be had, as I would like to buy some of them.—W. C.

### Painting Ammunition Boxes

In one of your recent issues we remember having seen an article on painting ammunition boxes. We are quite interested in this article but unfortunately are not now able to locate that particular issue. Can you send us an extra copy please?—C. F. Co.

The article appeared in July 1943 issue, copy of which is being sent.

*Remember Pearl Essence for*

**ALUMINUM**
**GUNMETAL**
**BRONZE**
**BRASS**
**NICKEL**
**finishes**

**THE MEARL CORPORATION**
153 WAVERLY PLACE NEW YORK, N. Y.

*Factories*

ROSELLE, N. J.

EASTPORT, ME.

Priority Rating Is Not Required

Available in Unlimited Quantities

"WORLD'S LARGEST PRODUCER OF PEARL ESSENCE"

# Materials Supplies Equipment

## Pickling Machine an Aid to Shell Production

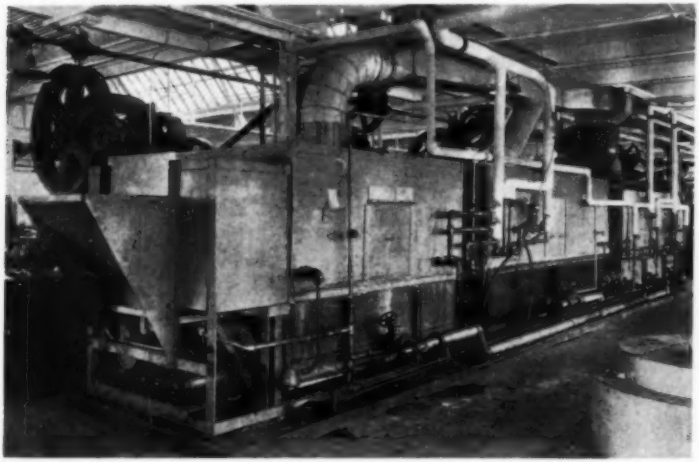
Designed to meet the need for increased production of shells, a continuous, drum-type pickling machine has been developed for high-speed cleaning of shell cases, by the Howard Engineering & Mfg. Co., 1846 Freeman Ave., Cincinnati, Ohio.

Actual operations reveal that the machine is capable of pickling a maximum of 8000, 37-mm. shell cases per hour. Parts to be cleaned travel through the machine in a drum which varies in diameter between sections, so that each section of the drum runs in its particular tank. Scale is removed from annealed parts by successive pickling, rinsing, neutralizing and rinsing operations. A variable speed drive provides for necessary changes in the pickling time.

An important and economical feature of this machine is its operation without the use of pumps. Acid, rinse and neutralizing solutions are picked up by scoops on the side of the drum, and are dumped by the scoops on the parts. This method is said to substantially reduce consumption of acid; costly pumps and their upkeep are entirely eliminated, expediting delivery and conserving critical materials.

## New Emulsion Cleaners

The Enthone Co., New Haven, Conn., announces the development of two new emulsion cleaners. One material, "Enthone Emulsion Cleaner," is an emulsifiable solvent in the ready-to-use condition. The cleaner is designed for rapid cleaning of oil, grease and solid dirt without attack on any



It is 9-ft. high, 8-ft. wide and 35-ft. long; other sizes are available too.

Until VICTORY Remember this

Clinco

PROTECTIVE COATINGS

will continue to serve manufacturers of implements of war —enabling them to meet rigid Government requirements in coating their products!

Manufacturers of Superior Quality Lacquers, Synthetic Enamels, Paints, Stains and Specialties.

THE CLINTON COMPANY

1210 Elston Avenue • Chicago, Illinois

*Buy More War Bonds and Stamps*

basic metal, including zinc, aluminum, brass, lead, and steel. The use of the cleaner is stated to enable fast, complete cleaning of very oily or dirty work, giving more adherent, brighter and less porous electro-deposits and more adherent organic finishes. A saving in alkali cleaner is also claimed. The work to be cleaned is swished about in the cleaner and is then rinsed off in running cold water, which emulsifies the cleaner with all of the dirt. A short immersion in an alkaline cleaner, following this, prepares the work for finishing.

The cleaner has high penetrating power, high emulsifiability, and rinses rapidly and completely. Its flash point is above 100° F., and it has no strong disagreeable odor.

The other emulsion cleaner is called "Enthone Emulsion Cleaner Concentrate," which is a base of strong emulsifiers that is mixed with from 9 to 15 volumes of solvent naphthas, and used in the same manner as the Emulsion Cleaner. The base enables users of large amounts of emulsion cleaners to obtain emulsion cleaners at a somewhat lower cost.

## Improved Fire Extinguisher

A new type of valve for carbon-dioxide fire extinguishers, known as the "Squeez-Grip," has been developed by engineers of the C-O-Two Fire Equipment Co., of Newark, N. J.

The new valve operates by a lever directly over the carrying handle of the extinguisher. By merely applying pressure, or squeezing, with one hand, the valve is opened and the gas discharged. On releasing the pressure, the valve closes and the gas discharge is cut off.

The valve can be opened and closed without setting down the extinguisher, which must be done when a hand-wheel type of valve is used. As the operator, carrying the extinguisher with one hand and holding the discharge horn in the other, can easily start or stop the discharge while in motion, there is no loss of time or gas while maneuvering around a fire.

On closing, the valve is forced tightly against its seat by the tremendous gas pressure in its own cylinder. There are no replacement parts, such as sealing discs, etc., and the valve does not have to be taken apart for recharging and reassembling after filling.

The Squeez-Grip valve is applicable to any size carbon dioxide extinguisher of the hand type.

## Portable Electric Cleaning and Rinsing Tank

The Twin Dipmaster consists of two electrically heated hot-liquid dip tanks in one portable unit. The unit can be moved to wherever the parts to be cleaned are located, and plugged in on 110 or 220-volt A.C. or D.C. for instant heating.

The operator can quickly clean and rinse the metal parts or products in this one twin unit. The Twin Dipmaster has two insulated compartments separated by a partition that is also insulated. It has two removable immersion tube heating units (one for each tank) that deliver all the heat in the cleaning solution and rinse water. Separate, automatic heat control for each compartment is supplied by two thermostats regulating any required temperature from 110° to 550° F., and they operate independenty of one another. In addition, there are two built-in thermometers

It can be plugged in on D.C. or A.C.

# Pittsburgh's Broad Experience Helps Solve Vital Aircraft Finishing Problems

THE inspection of planes that have seen action on the fighting fronts has emphasized the importance of aircraft finishes. Their job is to provide *dependable protection* under the most difficult service conditions.

In solving the many finishing problems that have arisen, Pittsburgh's wide experience—accumulated during years of painstaking research—has been of unestimable assistance to airplane manufacturers. Thanks to our technical staff's specialized knowledge of aircraft finishes, it has been possible to improve standards of quality and performance.

Today, a vast gallonage of Pittsburgh aircraft finishes is being supplied to the airplane industry. In every one of these formulas we endeavor to put *plus* over minimum requirements.

**FREE ADVISORY SERVICE:** Pittsburgh maintains a force whose specialty is solving aircraft finishing problems. Whenever you need help, get in touch with us. One of our technical men is available for consultation.

PITTSBURGH PLATE GLASS COMPANY — Industrial Paint Division, Pittsburgh, Pa. Factories: Milwaukee, Wis.; Newark, N. J.; Houston, Tex.; Los Angeles, Calif.; Portland, Ore.—Ditzler Color Division, Detroit, Mich. — The Thresher Varnish Co., Dayton, O.

**PITTSBURGH** *Industrial* **FINISHES**

PITTSBURGH STANDS FOR QUALITY PAINT AND GLASS

registering temperatures from 100° to 600° F., and four dipping baskets.

Completing the standard equipment are scum gutters, draw-off cocks, an insulated cover, pipe connections for the addition of fresh water to the rinse compartment, as well as to drain off contaminated liquids, and two work grilles on which bulky parts can be rested during the cleaning and rinsing processes.

This equipment is manufactured and sold by Aeroil Burner Co., Inc., West New York, New Jersey.

## Spiral Abrasive Cones For Inside Curves

The spirapoint is a late addition to the gadget assortment devised for thousands of intricate light grinding, smoothing and polishing operations made necessary by the war effort. Built up of multiple layers of "Metalite" cloth strips of special shape, they take a slightly curving conical form, making them particularly useful for smoothing concave areas that have varying radii.

The winding of these specially shaped strips of abrasive cloth imparts a spiral effect to the abrading surface, which accelerates the cutting or polishing action and permits the cloth to wear away readily, exposing new cutting edges.

A few of the many shapes available.

Spirapoints are particularly effective for smoothing and cleaning odd shapes and any small concave or depressed areas otherwise hard to reach.

Spirapoints are available in two types, "full taper" and "side wall" as illustrated. Sizes for the full taper range from ⅜ to 1-in. base diameter and 1-in. or 1½-in. high. The side wall type is made in sizes from ½ to 1-in. base diameter and 1 to 2½-in. high with proportionate side walls. All standard grit numbers from 36 to 320 can be supplied.

Typical example of how it is used.

Mandrels of high grade steel, finely finished and Du-Lite dipped, to prevent corrosion, can be furnished.

These Metalite Spirapoints are products of Behr-Manning Corp., Troy, N.Y.

## Paint Stick Marker

A new Markal paint stick marker for use on all cold surfaces is announced by the Markal Co., 6 E. Lake St., Chicago, Ill.

This marker designated as Markal "N," makes a wider, more highly legible mark than other Markal paint sticks, and was developed especially for use in shipyards, steel mills, railroad shops, foundries, etc., but has a wide applicability elsewhere. Markal "N" is real paint in stick form and

# SEA-LAC FACTS

*Published Now and Then by* **DURALAC CHEMICAL CORP.**

SEA-LAC

REG. U.S. PAT. OFF.

## FINISHES TO GOVERNMENT SPECIFICATIONS AND "SEA-LAC" RECOMMENDATIONS

**ZINC CHROMATE AND OTHER PRIMERS**

For Aluminum Alloys, Steel, Cadmium and Other Metals

**METAL AND PLASTIC FINISHES**

High Soap and Heat Resistance
Salt Spray and Solvent Resistance
Low Moisture Permeability
Coatings for Protection Under Continuous or High Water Pressure

**AIRCRAFT DOPES**

**WRINKLES—NO CRITICAL OILS**

**STRIP COATINGS FOR MASKING OPERATIONS**

(Solvent or Waterproof)

**WATER DIP LACQUERS**

**ADHESIVES, QUICK-DRYING**

Fabric to Fabric
Cellophane to Fabric
Onion Skin to Metal
Rubber Cement Substitute, Requiring No Curing
Acetate Cement
Hard Rubber to Wood and Plastic

**CEMENTS, HEAT SEALING**

Paper to Metal
Paper to Paper
Metal to Cloth

**COATINGS FOR FABRICS**

Waterproof, Gasproof and Flameproof Coatings for Cotton, Rayon Silk and Straw

We could go on and on, as the list is practically inexhaustible. Some are serving at the front now. Some have served industry before. All will serve the nation in time to come.

There is an answer to every finishing problem. We either have it, or will formulate it for you without incurring obligation on your part. If it is a finishing problem whether metal, wood, fabric, or any other surface, chances are good that Duralac Chemical Corporation has an answer for it. Submit your problems for our recommendations.

**DURALAC CHEMICAL CORPORATION**

**LISTER AVENUE, NEWARK 5, N. J.**

produces permanent, fade-proof, weather-proof markings on metal, lumber, rubber, stone, marble, hard polished plate glass, porcelain, vitrolite, plastics, cellophane and other surfaces. It is fast drying.

Markal "N" is particularly suitable for layout purposes on steel plates, whether bare or coated with zinc chromate or other protective coatings used in pickling. The marks will dry sufficiently immediately after application, so that plates or surfaces marked may be handled without smearing. They dry thoroughly in ten minutes after which surfaces may be walked on without effacing the markings.

Useful and handy for many purposes.

Markal "N" is made in red, white, blue, green, yellow and black; so that each color may be used for easy identification purposes as well as for piece-work marking.

Literature and free samples on Markal "N" and other Markal paint sticks for hot and cold surfaces may be obtained by addressing the manufacturer.

## Portable Mixer Is Adjustable

A new belt-type portable industrial mixer, in which the motor hangs outside the tank and out of the path of destructive mixing fumes, is the development of United Electric Motor Co. Designed so that the balanced hanger carries the weight of the unit below the center of gravity, the United Mixer needs no tension on the clamp to hold the mixer in place.

Either AC or DC motors may be used, and precise best-mixing speeds are obtained by simple pulley changes. Belts and pulleys in the United Mixers are V-type and are readily interchangeable for low or high speed mixing. In plants where more than one mixing job is to be done, the United Mixer's adaptability makes it especially valuable, doing away with the necessity of extra equipment for each new job.

Belted motor hangs outside.

Bearings are combination radial thrust type, thus both the radial load of the shaft and the thrust encountered in pushing liquids up or down are taken care of. One complete piece, the heavy shaft, combined with the mixer's slow speed and rigid coupling allows for longer shaft lengths for deep tanks. Propellers are of the large, slow-speed type and are held on the shaft only by set screws, hence cleaning, removal or replacement is easy. The United Mixer is a product of the United Electric Motor Co., 178 Centre St., New York, N. Y.

## New Skin Protector

A new skin protector has just been announced by the Commercial Solvents Corp., 17 E. 42nd St., New York 17, N. Y. The new product, called CSC Protector, is non-sticky, white, and greaseless. It will not irritate sensitive skin, and it has no drying

# Many Industrial Uses

# FLOCK

Rayco Flock is textile fibres cut to extremely short uniform lengths, applied by adhesive to form a solid, even coating.

## *DECORATIVE*

Used to coat metal, plastics, wood, cardboard or paper, the various colors and types of Rayco Flock produce finishes simulating fabric, leather, mohair, velvet, velour, etc.

## *FUNCTIONAL*

Rayco Flock is used in airplane, automobile, camera and numerous other industries to cover, build up or transform surfaces or areas for such purposes as—

**SOUND DEADENING • • • TEMPERATURE INSULATION**
**INTEGRAL GASKETS • • SHOCK-ABSORBING SURFACE**
**NON-MAR SURFACE PROTECTION**

***Request Samples and Prices***

**RAYON PROCESSING CO.** of R.I. INC.
**55 TREMONT ST., CENTRAL FALLS, RHODE ISLAND**
*Developers and Manufacturers of Printing and Coating Flock*

effect even after long and continuous use. Women war workers find it helpful, since it eliminates permanent griming and grease-staining of hands and nails. CSC Protector-coated hands leave no stains or smudges on tools, papers, or metals.

CSC Protector is rubbed into hands and nails thoroughly before work is begun. It guards the hands for four to five hours after application. When work has been completed, the user cleans his hands as usual. CSC Protector washes away, taking dirt and grime with it. It is available in 8-oz. jars and in the economy gallon jar.

## Absorbent Floor Cleaner

A new oil and grease absorbent and floor cleaner, "Absorbo," has been developed by the Fidelity Chemical Products Corp., manufacturer of specialized cleaning compounds and detergents, of Newark, N. J. The product is listed by the Underwriters' Laboratories, Inc., as a Class 1 noncombustible absorbent "for reducing fire and slipping hazards and for cleaning floors." It is also odorless, non-poisonous, and non-injurious to skin, clothing, or flooring; it may readily be spread by hand and used on any type of floor surface; absorbs up to 45% to 50% of oil or grease by weight.

## Colored Coatings for Tracer Wire

The Sterling Varnish Co., 141 Ohio River Blvd., Haysville (Suburban Pittsburgh), Penna., announces the S-184 Identifiers, a group of colored identification coatings for tracer wire applications—to expedite the winding of electrical equipment. S-184 Identifier can be applied by running the wire through the varnish or by dipping the entire coil of wire in it. It gives a smooth finish and dries exceedingly fast, permitting handling in less than one minute after application. These identification coatings can be supplied in any color.

## Dr. E. H. Kessler, of Thresher Varnish Co., Dies

On Oct. 11, Dr. E. H. Kessler, Industrial Sales Manager of The Thresher Varnish Co., Dayton, Ohio, since 1936, passed away. Dr. Kessler was 45 years of age. He had been with The Thresher Varnish Co. 22 years.

Dr. Kessler was president of the Cincinnati - Dayton - Indianapolis - Columbus Production Club in 1931 and 1932, a member of the American Chemical Society, the Engineers Club of Dayton and was a charter member of the Dayton section of the American Chemical Society.

## Pumice Mines Retaken

Allied military action along the coast of the Italian mainland has recently resulted in the capture of the Island of Lipari. This development received little attention in the communiques sent to the United States, but to James H. Rhodes & Co. of Chicago and Long Island City, N. Y., it meant that for the second time in 30 years their pumice mines were captured and retaken from enemy hands. Pumice from this volcanic isle has long been considered by American industry as the finest in the world.

## American-Marietta Co. Plans Future Expansion

Anticipating tremendous demands for industrial and architectural finishes after the war's end, American-Marietta Co. has made definite post-war plans. Additional buildings will be erected and new equipment installed at the company's Kankakee, Ill., and High Point, N. C., plants. The Cleveland and Marietta, Ohio, plants will also be enlarged to facilitate capacity production made necessary by growing demand and expanding sales operations.

Grover M. Hermann, president of the company, informed stockholders that shipments of paints and industrial finishes for the current fiscal year, through August 31st, totalled $5,905,059.49, an increase of 5.96% over the corresponding period a year ago. Earnings also are in excess of those for the same period last year. Military and civilian orders already placed assure near capacity production for the remainder of the year.

## Turco Products' Research Work

To keep pace with new problems in the metal industries, an organic research laboratory has been opened in the Turco (Los Angeles) laboratory. Dr. Nathaniel Baum heads the new department.

# *Send for this NEW* FREE BOOKLET

## Tells how to prepare your war products for BLACK OXIDE FINISHING!

WHILE getting a CHEMICALLY CLEAN, grease-free metal surface is the FIRST STEP in obtaining durable, corrosion-resistant black oxide finishes, no one degreasing material or method satisfactorily meets all situations.

That is why you will want this NEW, 20-page booklet. The most complete yet concise discussion of performance-proved surface preparation techniques available today, it describes Oakite alkaline degreasing materials and acid detergents that are SPECIALLY DESIGNED to remove metal chips, smut, oil, grease, drawing and stamping compounds, scale, rust and shop dirt thoroughly, speedily. It gives you detailed methods now being successfully used for degreasing and descaling iron, steel, copper, brass, bronze, aluminum and zinc before black oxide finishing.

### Get Your Free Copy NOW!

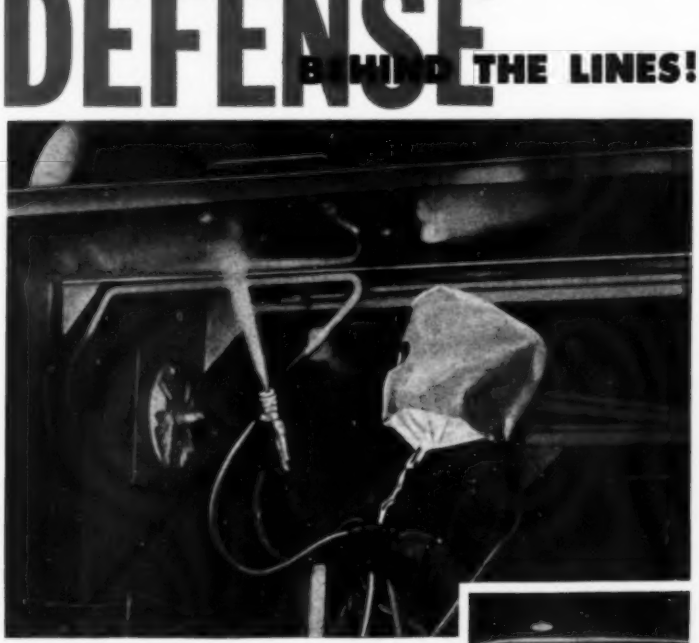
This informative booklet will HELP YOU get better, more uniform results. FREE to executives requesting it on their company letterhead.

**OAKITE PRODUCTS, INC., 32F Thames Street, NEW YORK 6, N. Y.**
Technical Service Representatives Located in All Principal Cities of United States and Canada

OAKITE MATERIALS · METHODS · SERVICE

CLEANING FOR EVERY CLEANING REQUIREMENT

# DEFENSE BEHIND THE LINES!



## FRUEHAUF TRAILER COMPANY
### helps keep 'em rolling at the front!

HERE'S rear-guard defense . . . for front-line action! Trailer repair shops, built for the Army by the Fruehauf Trailer Company, put the fight back in fighting equipment . . . keep our mechanized war machine rolling at the front!

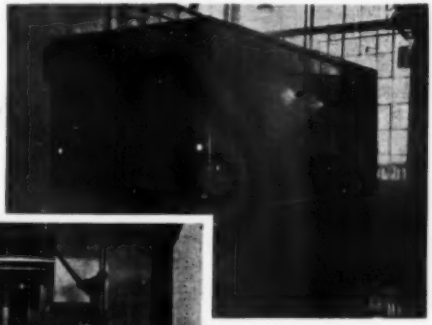
Mounted on a four-wheeled chassis with 8 tires, these repair shops are equipped with power-driven lathes, grinding machines, drills, spare parts—in fact, everything it takes to keep guns, tanks, trucks in fighting shape—in the thick of it.

*Installing plywood panels.*

*UPPER PHOTO: Applying finish coat of S-W Enamel.*

## SHERWIN-WILLIAMS

**WATER-TIGHT? YOU BET!** *Each mobile repair shop is given a rigid test for water-tightness. High-pressure water sprays, playing on the roof and sides for hours, check for leaks, make sure Army mechanics have a snug, dry workroom.*



**IN FIGHTING TRIM:** *Equipped completely with lathes, grinding machines, drills, and spare parts—ready to give a good account of itself where the fighting's thickest and the going's toughest!*

## SHERWIN-WILLIAMS gives FRUEHAUF-built mobile repair shops sure PROTECTION inside and out!

FOR strong durable finishes, Fruehauf Trailer Company uses Sherwin-Williams products throughout!

Walls and ceilings of the repair shops get two coats of light gray enamel, for maximum light reflection and minimum show of soil. Exteriors are primed with rust-inhibiting red oxide; finished with soft olive drab enamel. Both coats are oven dried within from 15 to 30 minutes.

Formulated especially to fit the job, these finishes are speeding production, helping Fruehauf turn out *better* finishing jobs at lowest possible unit cost. *The Sherwin-Williams Company, Cleveland 1, Ohio.*

**INDUSTRIAL FINISHES**

# Questions and Answers

## Sealer for Turned Wood Floats

We are seeking help to solve a problem of finishing the net floats we manufacture for commercial fishermen. These net floats are turned of Northern white cedar. Those we finish are 1¾-in. in diameter, 5-in. long, rounded at both ends, and have a 7/16-in. hole drilled lengthwise through the center of the turning, with the grain of the wood.

The old method of finishing was to apply a number of dip coats of boiled linseed oil, each coat being air dried. This method is impractical now on account of the time required, and also because the linseed oil available at present is of poor quality. We have used other materials and methods, using Bakelite resin varnishes applied under pressure for the first coat, with two dip coats. This material is no longer available to us.

We would be pleased to have any suggestions from your engineering department as to materials and methods that may be used in treating these floats. The chief requirement of the treatment is that it be a durable finish that will withstand high pressures when the floats are deeply immersed in water, and prevent the floats from becoming waterlogged. The floats should also be able to withstand boiling temperatures, as the fishermen occasionally have to boil the nets to which the floats are attached. The finish can not be sprayed on, as it is important that the surface inside the hole be as well protected as any other part of the surface.

Very little attention had been given these floats for some time, as aluminum floats were rapidly replacing the wooden ones at the beginning of the war. However, with aluminum floats out for the duration, fishermen must buy cedar floats again, and the demand at this time is heavy. We shall be pleased if you can help us in selecting the best possible materials and process for the finishing of our floats.

P. S.—We can give an AA-3 priority in ordering our finishing materials.—M. B. Co.

---

The dipping method of coating these floats is probably best. As for the sealer material to use, we are referring you to a few manufacturers of waterproof sealers. We hope that some of them can supply a material suitable for your purpose.—ED.

---

## Salvaging Jelled Enamels

The following are some additional replies in answer to the question on this subject, as published in Oct. issue, page 84.—ED.

---

With your permission, we should like to be excused from tackling this $64 question, as the salvaging of jelled or livered paints does not fall in our province. Seriously, however, we doubt very much that an intelligent reply can be made to

# HILO RIP-PL FINISHES

*Now Free From Tung Oil*

**YET PERFORMING**

*Important War Duties on*
**RECORDING, RADIO AND ELECTRONIC EQUIPMENT**

Hilo Rip-Pls are now made without chinawood oil. They wrinkle and bake as satisfactorily as old type finishes. These new Hilo Rip-Pls are equal to the old in exterior durability, salt spray resistance, toughness of finish, beauty of design, etc.

***Write Today for Samples and Details***

HILO

Established 1861

**HILO VARNISH CORP.**

42-60 STEWART AVENUE BROOKLYN, 6 N. Y.

CHICAGO: 2420 Washburne Ave. BOSTON: Park Square Bldg.

such a general question. Whether anything can be done will depend largely upon the exact nature of the composition of the paints and their past history. The best procedure will be to refer the problem to the original manufacturer of the paints.—JOHN J. ZOLAD (Industrial Coating Engineers).

---

Enamels which have jelled or livered may be salvaged, sometimes, by a procedure similar to the following: The jelled material is mixed with a vehicle (varnish, oil or resin) having good wetting and dispersing properties. It is usually necessary to add dry pigments also. The type and amount of vehicle and pigment added must be such that a usable product will be obtained (from the standpoint of drying, color and flexibility).

This mixture is then milled, a pebble or ball being preferred, until a smooth well-ground paste is obtained. This paste may be reduced to an enamel with thinners and/or vehicle. The method described has been successfully employed. It may be necessary to return the enamel to the manufacturer for salvaging. Knowing the vehicles and pigments present, the original manufacturer would be best qualified to perform the salvaging operation.—M. A. GLASER (Standard Varnish Works).

---

## Lacquering Nameplates

We are confronted with the problem of lacquering small nameplates, approximately 1/16x½x1½-in., with embossed name on face. These plates will be lacquered on the entire face, edges and back. We wish to do this on a production basis, as they will run in million lots.

We recall seeing a job similar to what this is in one of your publications, but we cannot locate the article at this time.

Would you be kind enough to give us any information as to the latest development in this field? We will appreciate a prompt reply, or reference to someone who can give us this information.—M. O. Co.

---

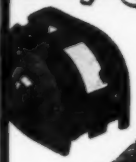
Since these plates have flat sides they probably cannot be successfully coated by tumbling or dip-whirling. If they have one or more holes or some kind of fitting on the back that will permit hanging each one to a hook, they might be dip-coated.

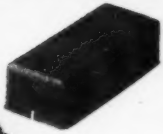
This would mean handling each one, and hanging them in multiple to racks which could be lowered into and raised from a dip tank by hand or by power. Or the racks could be hung to a conveyor which would take them through a dip tank and on through a drying zone.

Another method is to spread a number of the plates on a wire mesh tray of convenient size, place same on a turntable in the spray booth and hand spray them. After spraying, they could be force dried. Then place another tray over this one so the nameplates are sandwiched between two trays; reverse the trays and lift off the first tray. The uncoated sides of the plates are now exposed and can be spray coated and dried as before.

Still another method that could be worked out is to place them on a wire mesh conveyor and spray them by hand or automatically as they move along. This conveyor could carry them through a drying zone where the coating would dry quickly. They would have to be removed, turned over and put through again to coat the other side.—J. F.

*Only Extra Performance wins!*





*A New and Better*

# WRINKLE ALAKA FINISH

- It offers a desirable and uniform wrinkle formation.
- It is applied with the same ease and speed.
- It may be baked at 300° F for 1 hour.
- It may be baked with infra-red lamps.
- It bakes hard in very little time.
- It has great mileage in terms of coverage.
- It covers rough metal surfaces in one coat.
- Try it . . . . Use it . . . . Request a sample.

*Submit Your Finishing Problems to the Alaka Technical Department*

- New, Complete, Up to the Minute Catalogue of U. S. Government Specification Finishes

*Send for your copy*

LACQUER & CHEMICAL CORPORATION

214-220 FORTIETH STREET • BROOKLYN 32, N. Y.

*The forests of the World brought to Product Finishers . . . . . .*

BY

# *Sans-Arb*

PHOTO-LACQUER WOOD GRAIN VENEER

The fidelity with which original colorings and character of domestic and foreign burls, crotches, and straight grains are re-created in Sans-Arb photo-lacquer veneer amazes wood experts.

Millions of square feet of Sans-Arb used on nationally advertised furniture, radios and other [illegible] durability. Any grain desired . . . plastic, can be [illegible] Hundreds of patterns are available for all-over finish, banding or trim.

[illegible] can be cut to dimensions and

lacquer.
Millions of square feet of
nationally advertised furniture, radios and other
plastic, can
durability. Any grain desired . . .
Hundreds of patterns are available for all-over
finish, banding or trim.
Sheets of Sans-Arb can be cut to dimensions and
applied to virtually any shape, flat or molded . . . to
any smooth surface, large or small. Ease and speed
of application (manual or machine) make Sans-Arb
especially adaptable to custom or line production.
Up to 4500 feet per hour is easily obtained by in-
dustrial users. Simple-to-use solvents produce a
durable, lasting adhesion. Sans-Arb may be sanded,
rubbed, then top-coated with any wax, lacquer or
varnish type of finishing material. Send for colorful
literature and full details. Address Department 6712.
THE MEYERCORD CO.
World's Largest Producer of Decalcomania
5323 West Lake Street • Chicago (44) Illinois

## Veneers Too Dark? Remove Color

On page 60 of the October issue of INDUSTRIAL FINISHING, in an interesting article by H. W. Chester there appears the following comment: "Most wood furniture manufacturers are unable to obtain top grade veneers, as most of the veneers now available are of a poorer quality. . . . To overcome this condition it is necessary to readjust the stains, as in some cases there may be three or four different colors of veneers on the same piece of furniture. Then, in some of the low-grade veneers, there are dark mineral streaks, knots, etc. In order to cover these it is necessary to use a uniforming enamel of the proper color."

If I may, I would like to suggest another solution to this problem, which essentially *consists of removing the unwanted color from the wood veneer instead of trying to cover up the unwanted defects.* In attempting to stain out any variation of color in a piece, the stainer must necessarily make all the veneer dark in order to match his darkest piece of veneer. In doing so he must, as Mr. Chester points out, use several stains. To be at all successful this method is, of its very nature, time-taking and it consumes much scarce and costly material. In the end, the finish has nothing to commend itself as such a method only makes the veneer "muddy" and dark in appearance. There is no depth to the finish and the grain and figure of the veneer are practically invisible.

When I suggest removing the unwanted color before any staining is done, it does not follow that I seek to achieve a bleached finish. *The goal is only to bleach enough to match all the pieces of veneer in one article.* As the bleacher acquires skill in the handling of his materials, he will be able at the same time to standardize the raw color of each piece of furniture as he treats it. This is of great importance as it will allow the stainer to use standard stains on all similar pieces, and not cause him to waste a good deal of time and material in "doctoring" each separate piece. Some may object, stating that bleaches are tricky, hard to handle and often injurious to subsequent finishing. All of this is true of any bleach; the cure to these troubles lies in prevention and proper use of the bleach.

To begin with, it will not do to let the floor-sweeper graduate into the bleaching job. The man who bleaches must understand that he is preparing his work for the finishers. This means that you must have a man who understands what defects are to be removed and exactly what degree of overall color removal is to be accomplished. A good stainer generally makes a good bleacher, after a few lessons in the proper handling of his new materials.

It is important that bleaching be one man's full time job, and that he be impressed with the fact that he alone is responsible for the quality and performance of his work. It takes skill to get the most out of bleaching and that takes experience, day after day. Where bleaching has failed, it was often due to the fact that any idle finisher was given the job. It was an "orphan" of the finishing room and no one wanted it. No one wanted the work that was turned out under this system either.

Any finishing foreman who has developed a good bleach man would rather lose his right arm than lose

# ZINC CHROMATE PRIMER

O'Brien's Zinc Chromate Primer does more than just meet Spec. AN-TT-P-656a. It's a finely ground, O'Brien-quality product—and it saves time and money in actual quantity production.

We have Zinc Chromate Primer AN-TT-P-656a available for immediate delivery for proper end uses. The price is right. Let us quote on your requirements.

**O'BRIEN VARNISH COMPANY, SOUTH BEND, INDIANA**

his trained bleacher, for he is the man who takes any old veneer right in his stride and turns out pieces that look the same to the stainer, day after day. When was any purchasing department ever able to do as much for the finishers when buying veneer?

As to subsequent injurious effects on the finish: I have no axes to grind but there are bleaches and bleach formulas that contain water glass (sodium silicate). When the bleach dries, this silicate remains on the wood as a hard white coating. It takes a lot of hard sanding to remove most of it. No amount of sanding will remove all of it—and that is precisely why it is used. It makes the wood look white and bleached. To test the wood, it can be wetted and the color of the wood will then show up. This is the material that raises hell with the finish. No one who uses or recommends such materials understands fully the proper use of wood bleaching materials, and this is often the fault of the man who wanted to sell "just anything" and so victimized the unwary finisher. Every finisher has his "secret" formulas, and no doubt quite a few have one for a bleaching solution containing water glass.

The other cause of injury to the finish arises from an ill trained bleach man soaking the wood full of bleach and then not thoroughly drying it out. It will be found that placing bleached pieces, while wet, in sunny parts of the room, causes them to bleach quicker and dry better. Just a matter of common sense. If it is possible to rig up a few infra-red lamps to dry out the bleach work, so much the better. Such a process will not injure or "burn" the wood and, when used with at least one bleach that I know of, it will materially increase the bleaching action.

In regard to the proper use of bleaching solutions, it is always best to follow the manufacturer's directions. The fellow who can resist doctoring the bleach and thinning it out is hard to find. When the work gets spotty and off standard, look for the man who is trying to "improve" the bleach. In this respect, chemical salesmen sometimes approach the finisher and offer to give away a formula and sell the necessary chemicals. The men who use this home-made dynamite are the first ones to squawk about the troubles of bleaching and tell you how "Joe" lost his favorite eye when he splashed around in his chemicals while making some home brew. If bleach is such potent stuff then leave the brewing to a company that knows what it is doing. You can buy the necessary chemicals and make dynamite in your basement too, if you feel like it. The argument that, "I mix up paint, why not bleach?" just doesn't make sense after you get burned and the finish is ruined. So, for good steady and dependable results, buy a time-tested and factory-proven bleach, but be sure it contains no water glass.

It may sound very complicated by now, but it really isn't. If you decide to try it, do so with an open mind. When you find the bleach that does your work the way you want it done, brother, stick to it. Beware of the fellow who is going to show you how to save money on your bleaching. He will get you in the soup and leave you there. Remembering always, that some day someone really will have something that can do a better job—but it won't happen until the war is over, and until then you will still have that veneer Mr. Chester doesn't like.—KENNETH O'MEARA.

# FERBERT-SCHORNDORFER FINISHES PERFORM A DUAL ROLE ON DIAMOND "T" WAR TRUCKS

**TRUCK TRANSPORTER**

The giant diesel powered tank transporter, pictured below, saw continuous service in Africa. Painted Coronado Tan to blend with desert sands, it is designed for a gross trainload of 160,000 pounds.

The United States Army's huge tank transporters—among the world's largest motor trucks—are protected by Ferbert-Schorndorfer finishes . . . long used by the nation's leading truck manufacturers.

Our technicians, working closely with Diamond "T" engineers to produce the special camouflage colors and protective coatings needed for the strenuous service these giant trucks perform, helped to solve many finishing problems that arose with each new exacting task assigned these trucks.

This finishing "know-how" is yours for the asking. It is not too early to discuss your postwar plans with us—even while Victory is being won.

**THE FERBERT-SCHORNDORFER CO.**
12815 ELMWOOD AVENUE
CLEVELAND 11, OHIO

F-S

THE FERBERT-SCHORNDORFER CO.

# Booklets Catalogs Circulars

## Technical Data Sheets on Use of Deoxidine

Four pages of Technical Service Data on the use of Deoxidine No. 170 in the preparation of aluminum and aluminum alloys for "Alrok" treatment have been prepared for the trade by the American Chemical Paint Co., Ambler, Penna. Important headings include: What the Deoxidine process is, what it does, conditions under which it is used, steps in the process, equipment required, preparation and operation of solutions, materials for the work.

## Valdura Paint Catalog

The well-known Valdura line of heavy-duty industrial maintenance paints is listed in a new catalog just issued by the American-Marietta Co., 43 E. Ohio St., Chicago, Ill. Fully illustrated, the catalog provides application suggestions, product descriptions and technical data in complete detail. Attractively printed in two colors, it is easily handled and filed. The maintenance man or purchasing agent can plan his paint requirements and know the characteristics of drying, coverage and application by using this handy ordering catalog.

## Air-Recovery, Heat-Recovery Bulletin of Information

W. B. Connor Engineering Corp., New York, N. Y., has issued a new bulletin entitled "Air Recovery-Heat Recovery." Complete with charts, tables, illustrations, and specific examples, the bulletin points out how great savings can be effected in fuel this winter through the use of air recovery equipment. This equipment permits the use, over and over again, of air that has been properly conditioned as to moisture and warmth. In the summer, considerable savings are also obtained when air is cooled and otherwise conditioned. The data and information pages are securely bound in a standard file folder so that the bulletin may be filed for reference.

## Paint Spraying Rules

A wall chart of paint spraying rules showing how to save paint, air, time, power, fuel, and equipment, reduce time lost because of sickness or accident, and improve results, has been published by the Eclipse Air Brush Co., 400 Park Ave., Newark 7, N. J. These rules apply to all types and makes of spray equipment. This chart will be sent free to anyone requesting it.

## Woven Wire Conveyors

A 4-page bulletin, printed in black and red, illustrates and describes several types and designs of Metalwove belts for conveyor service in factories. For a copy, write Audubon Wire Cloth Corp., Richmond St. and Castor Ave., Philadelphia, Penna.

## Munsell and Ostwald Color Systems

The General Printing Ink Corp., 100 Sixth Ave., New York 13, N. Y., has prepared a 21-page booklet which contains a comprehensive description of the two major systems of color—the creations of Albert H. Munsell and Wilhelm Ostwald. After studying this little booklet, even the average layman should not find it difficult to apply these systems to his own needs.

This booklet also offers some interesting data on The Elements of Color by Faber Birren, the foremost authority on color in this country. A copy of this informative booklet is available upon written request to General Printing Ink Corporation, 100 Sixth Ave., New York 13, N. Y.

## Metal Cleaning Book

Important new data and applications for metal cleaning and finishing machinery—both for war and post-war use—are contained in a new 32-page catalog and manual issued by the Howard Engineering and Mfg. Co., 1804 Freeman Ave., Cincinnati, Ohio. Pages are 8½x11-in. and are bound in blue covers attractively lettered in white and red.

Problems involved in cleaning and

# RANDOLPH
## FINISHES
## SERVE ALL OVER THE WORLD

*DOPES · LACQUERS · ENAMELS*

# RANDOLPH
## FINISHING PRODUCTS CO.

Carlstadt New Jersey

finishing metal parts are described and illustrated in detail. Information is presented on the various types of cleaning machines, methods, and materials. Representative types of Howard machines are shown with detailed analyses of their operations. Sections of the book also describe cooling and drying equipment, Howard's experimental department, services and facilities.

A copy of the book will be sent on letterhead request.

## Vapor Degreaser Bulletin

A new 20-page bulletin, bound in heavy paper covers, printed in two colors and attractively illustrated, reveals valuable information about cleaning and drying metal parts and products by the Blakeslee Degreasing Process. Several sizes and types of degreasers are shown and described. Vapor, vapor spray and immersion phases of cleaning are explained to help you determine which type or combination of types are needed for your particular work. For a free copy of this valuable bulletin, write G. S. Blakeslee & Co., Cicero Station, Chicago, Ill.

## Tumbling Barrel Bulletin

An illustrated free bulletin that gives quick information about single and multiple tumbling machines for various cleaning and finishing jobs, has been issued by Lupomatic Tumbling Machine Co., Inc., 4510 Bullard Ave., New York 66, N. Y.

## Emulsion Cleaning Bulletin

The Enthone Co., New Haven, Conn., has issued a 4-page bulletin describing the company's emulsion cleaners. These cleaners are designed for rapid cleaning of all types of basic metals without attack and are recommended for cleaning of badly contaminated work. Four pages and an illustration are devoted to a description of the products and their use.

## Wheelabrator Operator's Manual

The comprehensive, illustrated manual on the care and operation of Wheelabrator airless abrasive blast-cleaning equipment, originally published in 1942, has been revised by American Foundry Equipment Co., 555 S. Byrkit St., Mishawaka, Ind. Those responsible for the operation of Wheelabrator machines will find the book packed with ideas which will help to increase metal-cleaning production and decrease operating costs. Instructions and suggestions contained in the manual are all based upon practical operating experience.

Although the Wheelabrator Operator's Manual is intended primarily for users of Wheelabrator equipment, much of the information will be of interest to all users of abrasive blast-cleaning equipment. Copies are free.

## Technique of Infra-Red Heat Transfer

An interesting and informative paper on the above subject was prepared and presented by W. S. Crandall before the Montreal Chapter, I.E.S., Oct. 12, 1943. Mr. Crandall is assistant manager of sales for the Fostoria Pressed Steel Corp., Fostoria, Ohio. Copies of the paper can be obtained free by writing the above named company.

## Salvage Manual for Industry

The first comprehensive practical manual on industrial salvage ever prepared has just been published by the Technical Service Section, Industrial Salvage Branch, Salvage Division, War Production Board, and is now being distributed to industry.

The new book, entitled "Salvage Manual for Industry," contains 245 pages of systematically organized and classified information and data—most of it of a "how-to-do-it" nature—on industrial salvage practice in all its ramifications. Material is presented in 26 chapters, grouped into six major sections.

The well-illustrated volume was prepared and edited by an editorial board of practical industrial salvage engineers and business paper editors. Assisting the editors either with direct contributions or advice was a corps of some 40 engineering or salvage experts. No effort has been spared to cover every possible phase of practical industrial salvage operations and to present the most reliable and authoritative information about them.

The book has been described by one authority as "a combination management manual and technical guide for salvage operations." Although its major purpose is to speed Victory the "Salvage Manual for Industry" is certain also to have continued application in post-war industry because of its attention to the economic benefits of sound salvage practice.

Price of the book is 50 cents per copy; it is procurable through the Superintendent of Documents, Government Printing Office, Wash., D. C.

# "RINKOLIN"

*a new wrinkle finish*

**made from LINSEED OIL**

## NEW RECORDS...

## —Yes, Sir,

**RINKOLIN is actually proving itself better than pre-war wrinkles! Skeptical? Send for users' letters. Better still, try five gallons yourself!**

**STANDARD VARNISH WORKS**

SINCE 1870

2600 Richmond Terrace
Staten Island, New York

2600 Federal Street
Chicago, Illinois

Industrial FINISHING

Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metal-working, woodworking and miscellaneous industrial plants where production cleaning and finishing are major operations in parts and products manufacture.

•

Published the 18th of each month by PRACTICAL PUBLICATIONS, Inc., 1142 N. Meridian St., Indianapolis 4, Ind.
Telephone.....Riley 6771

•

President.....W. H. Rohr
Vice-President.....E. A. Dosch
Secretary-Treasurer.....R. E. Suits

•

Subscription Rates Per Year
U. S. and Possessions.....$2.00
Canada and Foreign Countries.....$3.00
(No subscription solicitors are employed)

# Editorial

## Post-War Technical Developments in Paints

We are on the eve of a period that will probably be called "The Light Alloy and Plastic Age," and the paint industry will not be wanting when the demand comes for the desired protective and beautifying types of coatings. Although at first glance the industry might envision a post-war loss of some of its business, through the wider use of glass, ceramics, plastics, and certain light alloys, it is probable that the reverse will be true. For instance, coatings for plastics might be developed in order to make possible highly decorative color schemes for many purposes.

Modern light metal alloys should be coated either for surface protection or decoration. In fact, many of the paint problems of the future may center around the development of coating systems for such products. Any small losses of business which may occur will be made up many times through new developments which will create a much wider market for our products.

**Industrial Finishes.** The trend in industrial finishes will be toward even quicker air-drying or more rapid baking systems than those now employed.

Alkyds of a high degree of flexibility and a wide range of solubility, modified with other resins, will be developed. The methacrylate resins will find a wider usage in fume-proof white enamels and in other special compositions. The whole range of organic acids will be searched and experimented with in attempts to produce even more satisfactory industrial finishes than those now employed.

Alkyd finishes, or blends of alkyd, ethyl cellulose and other cellulosic compositions, will be used again on automobiles when that industry returns to normal, and the trend will be toward fewer coats of greater thickness, due to special methods of application. Modified cellulose nitrate lacquers will continue to be used in increasing quantities, especially for the finer cars. In the furniture field, low-bake synthetics will vie with lacquer and oleoresinous compositions.

**Varnish.** The tendency in varnish formulation will be toward production of a varnish base which will be of a low viscosity, so that the binding material may be as high as 80% with only 20% of volatile matter, as against 50% to 60% of volatile matter at the present time. Such varnishes will have quick drying and good working properties, and will have the advantage of tremendous savings in volatile matter which now goes out the window or up the hood.

**Lacquers.** Watch for lacquers applied through thermostatically controlled heating units or by other means whereby there will be a substantial saving of solvent and a thicker film produced.

Further developments in emulsified cellulose ester lacquers of non-penetrating character for paper, fabric, and packaging purposes will probably grow rapidly. Means for reducing the viscosity of cellulose nitrate will be found, so that even higher percentages of non-volatile matter will be practical. The solvents and diluents will also be reproportioned to allow more uniform evaporation during drying.

**Drying Oils.** It is probable that a thousand chemists have worked on the problem of quick drying oils to be used in place of tung oil. There is no doubt that tung oil will be used in large amounts as soon as it again becomes available. However, the industry will also continue to use replacement oils.

**Application of Paint.** In the last half decade, we have seen hot spraying introduced to the finishing industry. Perhaps after the war, hot dipping may be introduced. Such a method would call for more attention to stability of coatings in the liquid stage. Another aid to both spray and dip application, developed recently, is the guiding of the spray, and the removing of beads and tears by means of electrostatic fields. . . .—*Excerpts from Henry A. Gardner's article for the 1943 Convention of the National Paint, Varnish & Lacquer Association, Inc.*

---

## National Safety Council's Industrial Safety Work

Reorganization of the activities of the National Safety Council's industrial safety engineering division recently has been accomplished to provide more practical and specific assistance with accident and health problems in modern industry.

The new plan, which is in line with the general reorganization of the Council's program, makes full use of the industrial membership sections as centers for the accumulation and distribution of all safety information in their respective fields.

"It always has been recognized," says Walter S. Paine, vice-president for industrial safety, "that the Council's Safe Practices Pamphlets, Industrial Data Sheets, Engineering Summaries, Safety Instruction Cards, posters and other technical materials are unique.

"Nowhere else can such a wealth of technical and practical information on industrial safety be found. The new goal of the industrial division will be to make certain that this information is kept up to date, that it fits the exact needs of those who will use it and that it is presented in a form that will be most helpful."

Each safety engineer on the staff has been appointed as staff contact man for one or more of the industrial sections. He has been assigned in accordance with his

experience and knowledge of the industries represented in the sections. As contact man the engineer is expected to work with the various sub-committees of the sectional executive committees on all sectional problems.

The N. S. C.'s address is 20 N. Wacker Drive, Chicago 6, Ill.

## *Random Comment on the Industrial Scene*

BY LAWRENCE H. SINGER

**First Things First**—"Dear Mr. Singer," writes Van Buren Thorne, Jr., of General Motors, in answer to our query about a rumored new low-priced automobile, "I hasten to assure you that there is no truth whatsoever in the report. We keep a very close watch on printed references to General Motors, and the report that we would exhibit a new $800 car around the first of the year escaped our attention.

"I might point out a statement by C. E. Wilson, president of General Motors, in which he put the point very well. He said that anyone who comes out with a new car within a short time after the end of the war will have been cheating during the war. Our people are completely tied up with war production, and they plan to be that busy with it until the show is over—not just in production but in constantly improving the quality of war products, and designing new products. Thus you can see that some person was having a very wild dream."

* * *

**New Designs Will Wait** — Our curiosity about the above rumor had been aroused because we had been reading, just a few days before, a message to General Motors dealers, sent out by Alfred P. Sloan, Jr., chairman of the corporation.

Mr. Sloan, who ought to know, was puncturing the rosy pictures of tear-drop designed cars which would be popping off the line the minute war ceased. He pointed out that the first postwar autos would probably be the 1942 models, "with such modifications and improvements as can be made without important engineering developments or changes in tools."

G. Douglas Stengel of General Motors, who sent us a copy of this message, added the following postscript: "I do not believe Mr. Sloan's opinions have changed substantially since this was issued."

* * *

**Tomorrow's Economics**—When the war ends, the economic systems of the United States, Britain, Canada, Mexico, the Caribbean countries, New Zealand, Australia and Africa may have to be forged into one great unit. That is the prediction of famed Stuart Chase, in his report—"Where's the Money coming From?"—prepared for the Twentieth Century Fund.

"This will make the old national tariffs, currencies and trade practices look like remnants of the Stone Age," Mr. Chase continues. "To unscramble this pattern will not be the work of a day."

* * *

**Bleak Outlook** — In the entire aircraft industry there is hardly a firm that could meet its current pay rolls for a month out of surplus, in the event of sudden contract cancellations. This startling conclusion was contained in a survey of the field by the New York Times.

Provision for severance pay, liquidation of existing plants, and disposal of surplus war planes are among the vital needs stressed in this arresting report.

# Bleaches

By
KENNETH O'MEARA

COLOR DISSOLVENT
ASPEN CONCENTRATE
DECOLORANT

Manufactured Solely by

## H. BEHLEN & BRO., Inc.

10-12 CHRISTOPHER STREET NEW YORK CITY

## QUALATONE PRODUCTS, INC.

21 GAY STREET NEW YORK, N. Y.

**QUALASOLE**
PADDING LACQUER

Saves Dollars
On Time and Material

Finishing Departments
Throughout
THE UNITED STATES
Know the Economy
of
QUALASOLE

FOR THAT ALCOHOL
PROOF FINISH

**Qualalacq Super**
**No. 100-E**

*USE ON*
Bar Tops, Table Tops
Dresser Tops
Or, wherever an
ALCOHOL PROOF
FINISH is desired
NO. 100-E
GIVES RESULTS.

READ . . . . . "THE FINISH TO YOUR LACQUER PROBLEM"

**Food for Thought** — James H. McGraw, Jr., made some eminently quotable remarks in a signed editorial which appeared a few weeks ago in the McGraw-Hill business magazines. Here are a few pungent excerpts:

"We may suddenly find ourselves standing on the threshhold of a peace economy, with our war boots still on our feet.

"Unless we look ahead, there is danger that we may become neither the masters nor the servants, but merely the victims, of the future.

"We have yet to reconcile the conflicting interests of labor, agriculture and business, so that they can work together effectively. We have yet to learn how to check the fever of inflation and cure the palsy of depression.

"If our people are misled by false prophets and demogogues, it will be because business men did not understand economics, because scholars were too ignorant of practical affairs, and because we failed to produce economic statesmen of sufficient stature for the task in hand."

* * *

**Look Out!**—If technicians of the Eagle Printing Ink Co. had their way, we would switch to yellow as the standard danger symbol, in place of the traditional red.

According to a recently released survey, red falls short of requirements because it lacks high visibility. Yellow is most conspicuous and visible. Next in order are yellow-green, orange, and finally, red.

* * *

**The Old Is New**—Glass, one of the earliest materials known to man, has become one of the most useful in the war effort, according to a fascinating review of the industry by Lawrence N. Galton.

Glass shelving has displaced steel and wood in kitchen cabinets, stoves and refrigerators. Among its many other uses are in tabulating machines, oven doors, dance floors, roofing shingles, food hydrators and coiled springs.

It is Mr. Galton's contention that glass may deserve to rank with plastics and the light metals as the great new material for building a better tomorrow.

* * *

**For Visitors**—We have received a number of gratifying letters from readers planning to visit New York, who have taken advantage of our offer to obtain free broadcast tickets. If interested, drop a line to:

Lawrence H. Singer
130 West 86 Street
New York 24, N. Y.

Whenever possible, this department will also be happy to assist in the purchase of theater tickets. Several readers have asked us to list outstanding shows on Broadway each month. Here are our top selections:

Musical Comedies—Oklahoma, One Touch of Venus.
Comedies—Life With Father, Arsenic and Old Lace, Kiss and Tell, The Doughgirls.
Dramas—Angel Street, Harriet, A New Life.

* * *

**Lessons From Aviation** — The production of airplanes has been teaching automotive manufacturers a great deal about engine construction, wrote Walter Dorwin Tague, topflight industrial designer, in the New York Times Magazine last month.

Airplane engines weigh about 1-lb. per horsepower, he said, whereas prewar automobile engines averaged about 6-lbs. per hp. "Automotive engineers agree that the

postwar engine should not weigh more than 2-lbs. per horsepower," added Mr. Teague. "Some engines will be sealed, chemically cooled, and cause no more trouble than your refrigerator motor."

* * *

**Bright Hope** — Some wiseacres believe a convenient substitute for hard-to-get tung oil may soon be available to paint manufacturers. Don't laugh—it's the lowly milkweed! In addition to having proven an excellent replacement for kapok, research is demonstrating many other interesting possibilities for the long neglected weed. Over 300,000-lbs. were marketed by one small community of Minnesota farmers in the late summer harvest this year.

* * *

**One Hundred Times Faster** — The story of vastly increased production schedules in the finishing of radio tubes is told in R. C. A.'s new pamphlet—"Electronics in Industry." Subjecting painted metal tubes to oven-bake heat requires five minutes of pre-heating and 45 minutes more of baking.

However, if the tubes are passed through a long coil carrying electronic power, we read, heat is induced in the metal shells, and baking of the paint can be cut down to 15 seconds! A 2-kw. radio frequency generator will supply enough r-f power to bake the paint at the rate of 2400 tubes per hour. These additional advantages of electronic baking are also cited: space saving, high efficiency, and the prevention of loosened tube bases.

* * *

**Music Lifts Production**—We are in receipt of a genial letter from Billy B. Van, famous oldtime vaudeville star, who is now Director of Human Relations for the

*Approved Service Colors for Marking Overseas Shipments*

**RONAN**

**"MARK-IT"**

**TYPE A** (Lacquer Type). These colors are waterproof and sunproof. They may be used with a marking brush or sprayed through stencils. Immediate drying. Work equally well on paper, cartons, wood cases, fabric or other packaging materials. Available in U. S. Army Specification colors for Ordnance, Air Force, Engineers, Chemical Warfare, Quartermasters, Signal, Medical and Transportation. Also Black-out Tan, Clear and Olive Drab.

**TYPE B.** Fast-drying paste colors for roller coating and striping. Dry flat in 2 minutes.

**TYPE C.** For silk screen application.

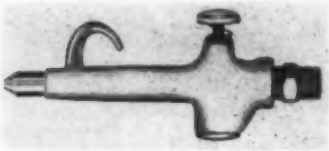
***Write for details, prices and color card.***

RONAN

**T. J. Ronan Co., Inc.**

**749 E. 135th St., New York City**

***Paints — Varnishes — Lacquers***



**Leakproof Air Blow Gun**

Use this gun for blowing dust, dirt or lint from the surfaces of parts and products to be coated with paint or any other kind of coating. It will improve your finish tremendously.

Also useful for blowing out moisture or other entrapped liquid from crevices, seams or indentations in parts to be cleaned or painted.

Fits comfortably in the palm of hand. Has button control air valve. Special composition washers prevent leakage. We can furnish any type nozzles—round, pointed, flat or 10-in. extension. Nozzles are interchangeable and renewable. Every plant should have one or more. Write us!

**G. M. MANUFACTURING CO.**

Engineers, Mfrs. of Complete Spray Equipment

216 N. Clinton St. Chicago, Ill.

**SPEED UP WARTIME Production!**

WITH THIS NEW

**Cesco No. 94 RESPIRATOR**

★ Full U. S. Bureau of Mines Approved (No. BM-2142) against Type A (Silica), Lead and Nuisance Dusts. Equip your workers with this new COMFORTABLE and SAFE Respirator for FASTER DEFENSE PRODUCTION. It's the "Cesco No. 94." Write.

**Chicago Eye Shield Co.**

2367 Warren Blvd. Chicago, Ill.

Fellows Gear Shaper Co. at Springfield, Vermont. He wrote to tell us about the tonic effect of the industrial music which is furnished to the thousands of employes of the factory through 60 loudspeakers.

"We have found that it not only helps morale," Billy tells us, "but it cuts down absenteeism, and definitely increases production, because the workers are happy at their jobs."

Incidentally, Billy sent along a recent photograph of himself, with his oft-quoted motto appearing in the background: "Give Us This Day Our Daily Work, And We Will Get The Bread."

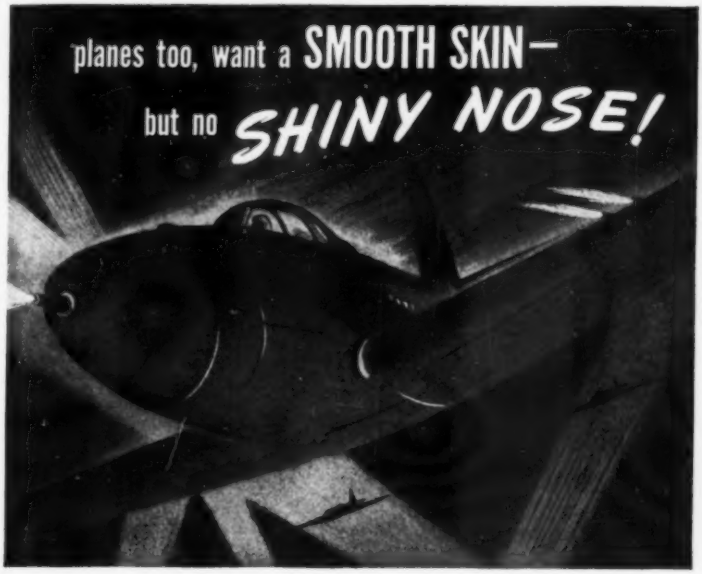
* * *

**New Adhesive Triumphs**—We reported several months ago about Goodyear's sensational new adhesive—Cycleweld—whose formula is classified as a war secret.

The other day we were reading a late survey of this material, prepared by S. G. Saunders, production research engineer of the Chrysler Corporation. He reports that Cycleweld is already being widely used in airplane construction, and that it produces a joint which is stronger, easier to build, and cheaper than those riveted or welded. It is being used in wing flaps, structural sections, fiber and wooden gasoline tanks, and hundreds of other aircraft parts.

## Dope Control

THE fact that two batches of dope (for covering aircraft fabric) are purchased under the same specification is no criterion that both batches will exhibit identical characteristics after application. A specification so narrow that variations within the limits of the




CAMOUFLAGING combat planes is a delicate business. The paint must be dull, so no tell-tale flashes or gleams are reflected. But dull-finished enamels are usually rough-surfaced and thus they increase "skin friction", reduce speed, waste power. So Arco has developed AIR-SLIP, an unprecedented *lusterless* enamel which meets the requirements for non-specular camouflage colors, yet provides most of the advantages of a highly polished surface.

Thus the Arco Research Laboratories meet specific needs with specialized products, tailored to fit . . . demonstrate once again their ability to find the solution to any problem paint can solve.

*Paints for Industry* THE ARCO CO.
CLEVELAND, OHIO • LOS ANGELES, CALIF.

*An Outstanding —*

**ENAMELS**
**BAKING ENAMELS**
**LACQUERS**
**SEALERS**
**PRIMERS**
**SYNTHETICS**
**VARNISHES**
**SHELLAC**
**FILLERS—STAINS**
**FINISHING SUPPLIES**

*Shellac Replacement Product*

Has all the desirable qualities of Shellac.

Has extremely high resistance to water — Thins with alcohol — Dries fast and hard — Good adhesion — Sands easily.

It is a development of our laboratory and has been thoroughly tested over a long period.

**A GENEROUS WORKING SAMPLE WILL BE SENT FREE ON REQUEST. WRITE TODAY.**

NEW PERIOD PRODUCTION FINISHES

**NEW YORK WOODFINISHERS SUPPLY CO., INC.**
109 IMLAY STREET BROOKLYN, N. Y.
Established 1917

**RUDD**
LACQUER CORPORATION
SPEEDROY
RUDLACO
NOROY
UNIFORMITY · QUALITY · PERFORMANCE
127 MAIDEN LANE
NEW YORK, N.Y.
FACTORY - RAHWAY, N.J.

specifications are impossible, would create undue hardship on the manufacturers of the product. Such hardships, during critical periods, must be avoided whenever possible.

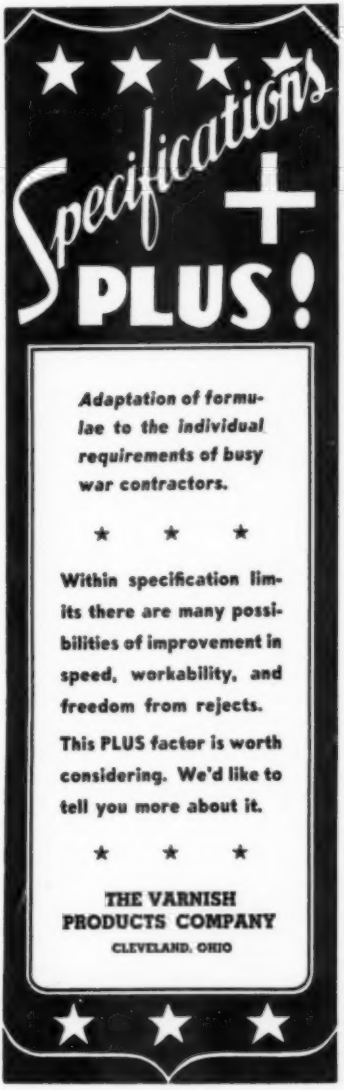
At the same time requirements for nitrocellulose dope characteristics after application are very rigid. This is especially true of military aircraft. Here again that much abused phrase "quality control" must be brought into action.

Fortunately, quality control of the nitrocellulose dopes is relatively simple, requires no excessive outlay for equipment, and can be practiced by the most casual users of this product. The following non-technical procedure for the quality control of dope is entirely practical, and is the sole means of quality determinations employed by many large aircraft companies.

Immediately upon receipt, one drum representing a single batch of dope should be thoroughly stirred or agitated. This may be accomplished by either hand or mechancal means. After agitation, examination should be made to determine if pigments have settled into an insoluble mass, or if a lumpy, gritty, or jellied condition exists.

If the material passes the test just mentioned, a sample should be removed from the container and forwarded to the dope shop. The dope shop should maintain at all times a supply of wooden frames covered with regular production fabric. The size of the frames is unimportant, but 12x12-in. is convenient to handle and not too large to file for future reference.

Using the dope sample, the fabric on the wooden frame should be processed strictly in accordance with the specification governing production. After processing, a competent inspector should exam-


Specifications
+
PLUS!
Adaptation of formulae to the individual requirements of busy war contractors.
★ ★ ★
Within specification limits there are many possibilities of improvement in speed, workability, and freedom from rejects.
This PLUS factor is worth considering. We'd like to tell you more about it.
★ ★ ★
THE VARNISH PRODUCTS COMPANY
CLEVELAND, OHIO
★ ★ ★

ine the sample for the following:

1) Bubble and pin holes prior to becoming dry.
2) Blushing.
3) Drying time.
4) Hiding properties (pigmented dopes).
5) Color shade (as compared with previous samples).
6) Evidence of excessive gloss in non-specular dopes.
7) Failure of the undercoats to recover original tautness after second application.
8) Brittleness (tested by stressing the underside of the doped fabric).

Certain instruments are available for testing such factors as comparative color shades and brittleness, but for most purposes visual inspection and mechanical stressing will suffice. Specified humidity and temperature should be maintained during the processing of the dope sample.

After the sample has satisfactorily passed the above inspection procedure, it may be submitted to a weatherometer or weather-exposure test if desired.

A complete record of all test data should be maintained, along with the purchase order, manufacturer, and specification number of each dope sample tested. This data, filed with the actual test specimen, will be invaluable if subsequent trouble occurs.—G. C.

SOLVENTS RECOVERED BY
THE LOFGREN PROCESS
We RECOVER YOUR
SOLVENTS & THINNERS
from . Sludge . Waste . Wash . Spelled Lacquers, etc.
Each customer's shipment, whether one drum or a carload receives PROPER and SEPARATE TREATMENT. Write to:—
SOLVENTS RECOVERY SERVICE
1019 Broad Street, Newark, N. J.
or
HAMMOND CHEMICAL SERVICE,
341 Brunswick St., Hammond, Ind.

NALCO
Infra-Red Ray Lamps
Best for Infra-Red Ray Baking and Drying
Carbon Filament Lamps, service proven, available in Inside-Silvered (self-reflecting) or in Clear Glass types. Write for details.
North American Elec. Lamp Co.
1030 Tyler St. St. Louis 6, Missouri

## Wartime Furniture Finishing

IT IS hard to make suggestions or recommendations in regard to furniture finishing schedules nowadays. The reason is that materials available today are off the list tomorrow, and it is a daily problem how to keep going.

Many furniture factories have adopted varnishes to replace lacquers, and they are getting fairly good results, especially those who can make use of varnish drykilns.

A few fairly good substitutes for sealers or shellac are available. These are used as a first coat under varnish. Although these substitute sealers do not dry as fast nor sand as easily as the regular type of sealers, they can be used under varnish.

The most essential thing in using varnish is to keep the finishing room clean and warm enough, and properly ventilated (but not too drafty) and prepare the wood surfaces so they are as smooth as possible. This will provide a good foundation for the finish coats and will eliminate the use of extra coats of varnish in order to get a good finish.

I have seen work finished with two coats of varnish, with no sealer at all, and it looked good; also, the 2-coat varnish job produced a durable finish. If the first coat of varnish can be dried overnight, in a kiln at 110° F., with a relative humidity of 42% to 45%, the work can be sanded and recoated the next morning. The second coat of varnish, after going through the same drying schedule, can be rubbed, if necessary, in 24 hours after it is sprayed on.

In regard to the matter of putty for nail holes, etc., I would say that a good water putty, tinted to match the finished woodwork, would be the best to use—if applied before the woodwork is sanded and stained.—F. ROSEN.

## Factory Fires

*If you want a real good fire, lock the fire alarm box and hide the key.*

The fire bill here was $375,000 and it appears that everybody did everything wrong. Just read the facts.

"On the night of the fire a few men were doing spot welding in the basement of the single-story section of the plant near the lacquer department. A spark from the welding machine apparently dropped into pyroxylin scrap on the floor. Workmen attempted to extinguish the resulting flash fire without calling the fire department, but the flames soon ignited lacquer in open tanks nearby.

"There was further delay in calling the fire department because a private fire alarm box was locked, the key missing, and the office where the telephone was located was also locked. The chief of the local fire department . . . found the outside post indicator valves shut when he arrived. At that time the entire

CROWN
"25"

This NEW Crown gun gives high efficiency and speed in production work and maintenance and other painting and finishing jobs . . Uses time-tested Crown "20" Spray Head assemblies . . Full Spray Width, Material Adjustment . . Write for literature and prices.
Built to Stand the Gaff
SPRAY GUN
CROWN SPRAY GUN MFG. CO.
1218 Venice Blvd. Los Angeles, Calif.
Warehouses in Principal Cities

CHEMICALS BY GLYCO
For The
PAINT, VARNISH AND LACQUER INDUSTRIES
Send for our new catalogue, "Chemicals by Glyco."
Glyco Products Company, Inc.
26 Court St., Brooklyn 2, N. Y.

single-story section was a mass of flames and the fire was spreading to the main 4-story building through unprotected window openings. He then had the sprinkler valves opened, but was obliged to reclose them to obtain water for hose streams because of loss of water through the many sprinklers which had opened. Public facilities were inadequate to control a fire of such proportions and the loss was total.

"Who shut the sprinkler valves, which are known to have been open two days before the fire, and why they were shut has not been established."

* * *

*Do you teach your men how to handle flammable liquids?*

In this case a worker's carelessness cost $511,700. Sloppy housekeeping and poor fire protection planning did the rest of the damage.

"This metal-working plant was destroyed by fire when a workman broke an electric light bulb while he was washing a paint spray gun with toluol. The highly flammable vapor immediately flashed and the flames spread quickly throughout the plant.

"Apparently little or no thought had been given to fire protection of this plant beyond first aid appliances. The building was not subdivided. The paint spraying room was of frame construction and was loaded with a great accumulation of paint drippings."

*From "High Pressure," April issue, by Walter Kidde & Co., Inc.*

## Becomes Industrial Sales Manager of Thresher

The Thresher Varnish Co., Dayton, Ohio, announces appointment of James Fletcher as Industrial Sales Manager. Mr. Fletcher was born and educated in London, England, and graduated from the London Polytechnic School of Engineering. He came to the United States in 1925 and had charge of the Paint Testing Laboratory of the Hudson Motor Car Co., Detroit. After nine years' service with Hudson he became associated with Ditzler Color Co. in Detroit, as manager of technical service.

## More About Metal Cleaning

In the fabrication of ordnance material and other essential war supply items, various special, and often difficult, problems arise in connection with the removal of many types of oxide films and stains, light rust deposits, heat treat films, annealing scales, soldering and brazing fluxes and similar accumulations from ferrous and non-ferrous parts. A new, 12-page illustrated instruction manual, incorporating the latest technical data on the use of time-saving, acid-detergent techniques for accomplishing the safe, effective removal of these deposits, has just been issued by Oakite Products, Inc., 32F Thames St., New York 6, N. Y. It is free.


**BOOKS On Finishing Available**

| | |
|---|---|
| "CHEMICAL FORMULARY" (Vol. VI) | $6.00 |
| "WOOD FINISHING" (360 Pages, Cloth) | 2.00 |
| "THE MIXING OF COLORS AND PAINTS" | 2.00 |
| "FINISHING METAL PRODUCTS" | 3.50 |
| "LACQUER AND SYNTHETIC ENAMEL FINISHES" | 5.50 |
| "SPRAY PAINTING—Industrial and Commercial" | 1.50 |
| "SILK SCREEN METHODS OF REPRODUCTIONS" | 3.00 |
| "PRACTICAL FURNITURE FINISHING" | 1.25 |
| "FURNITURE FINISHING" (543 Pages) | 4.00 |
| "NATIONAL PAINT DICTIONARY" | 7.50 |
| "SUBSTITUTES" (Latest Book) | 4.00 |

*Cash Must Accompany Orders*

**INDUSTRIAL FINISHING, 1142 N. Meridian St., Indianapolis 4, Indiana**

### ADVERTISING AND MARKETING MAN WANTED

Leading manufacturer of raw materials, used by the paint, printing ink, textiles, rubber and lubricating industries, is looking for a man who is capable of taking charge of advertising and sales promotion work.

The right man should be able to take new products, determine the market. Survey and plan, then follow through a sales and advertising program.

The position is permanent, and the salary is open.

Replies will be held in strict confidence.

Our own employees know about this advertisement.

Reply by letter only to IF-958, care Industrial Finishing.

### FOR SALE

One New DeVilbiss Spray Booth No. 178 Type L. X. E. with gun and gauges, floor space used 45-in. x 62-in.

One New Automatic Infra-Red Dryer complete with 60 lamps, blower and conveyor mechanism, floor space used 12-ft. x 12-ft.

**McQUAY-NORRIS MFG. CO.**
Mass. Ave. and Steele St.
Indianapolis 7, Ind.

### FOR SALE.

**Continuous gas fired baking oven for force drying paint. 11'6" wide, 48'6" long, 12' high with floor space 6'8" high under half of oven. Self dipping arrangement. Has been operating at 275° F. Priced at $1,500 for quick sale. Price includes all burners, motors, driving gears, and controls. Purchaser to remove from our factory.**

**OVERHEAD DOOR CORPORATION**
**Phone 241, Mr. Moler,**
**Hartford City, Ind.**

### FOR SALE

Four "Progressive" gun type spot welders. Complete with time controls. Two with 5-inch gap frame, two with 15-inch gap frame. Transformers 50 K.V.A.—220 volts—60 cycle.

Also one complete spraying and baking unit with overhead chain carrier, consisting of two 16-ft. DeVilbiss water wash spray booths. One Ross duplex baking oven with separate gas fixed heaters. Oven 50 ft. long. Continuous chain through spray booths and oven, so that a primer and finish coat can be completed without removal.

All in first-class condition. Were in operation only a short time.

**G. M. O'NEIL**
Pepsi-Cola Company, L. I. City, N. Y.

## Classified Advertising

**Rate: 45 cents per line per insertion—minimum $1.35**

### POSITION WANTED

As service man or salesman with reliable paint company. About twenty years' experience finishing wood and metal. Five years' experience with a large paint concern as service engineer, servicing refrigerator and automotive accounts. Best of references. Address IF-956, care Industrial Finishing.

### INDUSTRIAL SALESMAN

Having both laboratory and sales experience with the best of references. Wish to make connection with an honest reliable industrial house. Address IF-957, care Industrial Finishing.

### INDUSTRIAL PAINT REPRESENTATIVE.

A strong and well established Cleveland industrial concern wants an experienced industrial paint man for Ohio territory to sell war paints and to prepare a foundation for postwar sales of industrial paint finishes. Salary and expenses. Give age, experience and other qualifications. Address IF-955, care Industrial Finishing.

### WANTED

Dirty or misblended solvents. Will purchase or reclaim your materials. Write for details giving quantity and approximate composition. M-K-W RESEARCH LABORATORIES, Station D, Box 8, Dayton 10, Ohio.

### PERIODICALS.

MAGAZINES—Business—Vocational—Diversion. Current single copies. Choose from 569 different publications, covering air conditioning, automotive, aviation, finance, building, electrical, hobbies, industrial, insurance, lumber, metal-working, music, paint, poultry, refrigeration, transportation and more than 150 other fields. List with prices free. COMMERCIAL ENGRAVING PUBLISHING CO., 34J North Ritter, Indianapolis 1, Indiana.

### FOR SALE.

30 Drums Gray Army Paint—quick drying, good coverage, gloss finish: $1.00 per gallon. Address P. O. BOX 1390, Erie, Pa.

# Index to Advertisers


Advance Paint Co. ..... Third Cover
Aluminum Industries, Inc. ..... 27
American Chemical Paint Co. ..... 17
Arco Co., The ..... 93

Behlen & Bro., Inc., H. ..... 89
Berry Brothers ..... 23
Binks Mfg. Co. ..... 40-41

Cellusuede Products, Inc. ..... 8
Chicago Eye Shield Co. ..... 92
Claremont Waste Mfg. Co. ..... 4
Classified Advertising ..... 99
Clinton Company, The ..... 61
Crown Spray Gun Mfg. Co. ..... 97

Day & Co., James B. ..... 10
Despatch Oven Co. ..... 33
DeVilbiss Co., The ..... 34-35
Dolan & Co., V. J. ..... 5
DuPont deNemours & Co., E. I. ..... 44-45
Duralac Chemical Corp. ..... 65

Egyptian Lacquer Mfg. Co. ..... 57
Enthone Company, The ..... 1

Ferbert-Schorndorfer Co. ..... 81
Ferro Enamel Corp. ..... 51

G. M. Manufacturing Co. ..... 92
Glyco Products Co., Inc. ..... 97
Grand Rapids Varnish Corp. ..... 29

Hammond Chemical Service ..... 96
Hilo Varnish Corp. ..... 73

Industrial Chemical Development Corp. ..... 5

Johnson & Sons, Inc., S. C. ..... 43

Kirk & Blum Mfg. Co. ..... Back Cover
Koch Sons, Inc., George ..... 31

Lacquer & Chemical Corp. ..... 75
Lawrence-McFadden Co. ..... 6
Lilly Varnish Co. ..... Front Cover

Maas & Waldstein Co. ..... 15
Mahon Co., The R. C. ..... 36
Mearl Corp., The ..... 59
Meyercord Co., The ..... 76-77
Mixing Equipment Co. ..... 7
Murphy Varnish Co. ..... 39

New York Woodfinishers Supply Co. ..... 94
North Amer. Electric Lamp Co. ..... 96

Oakite Products, Inc. ..... 69
O'Brien Varnish Co. ..... 79

Paasche Airbrush Co. ..... 55
Pittsburgh Plate Glass Co. ..... 63

Qualatone Products, Inc. ..... 89

Randolph Finishing Products Co. ..... 83
Rayon Processing Co. of R. I. ..... 67
Reliance Varnish Co. ..... 47
Rockford Varnish Co. ..... 53
Ronan Co., Inc., T. J. ..... 91
Roxalin Flexible Finishes, Inc. ..... Second Cover
Rudd Lacquer Corp. ..... 94

Sherwin-Williams Co. ..... 70-71
Solvents Recovery Service ..... 96
Standard Varnish Works ..... 85
Stanley Chemical Co. ..... 25
Sterling Tool Products Co. ..... 11
Stille-Young Corp., The ..... 9

United Lacquer Mfg. Corp. ..... 6

Varnish Products Co. ..... 95

Watson-Standard Co. ..... 19

Zapon Division—Atlas Powder Co. ..... 2

# *Saluting our Allies of*

# UNITED NATIONS

★One of a series to be published in the interest of the War effort. Back up our Allies! Back up our own heroes! Buy more bonds!

## ☆U.S.S.R.(Russia)☆

IN THE YEAR 1812 Napoleon started his trek to Moscow—he got there, was forced to retreat and met disaster on the attempted return to France. Out of some 400,000 troops only about 20,000 returned safely. Today, history is being repeated. Another "would-be" Napoleon is being ejected from Russian soil and his military power is being destroyed. The United Nations owe a debt of gratitude to the courageous and fighting spirt of these men and women of the U. S. S. R., for they have smashed the legend of invincibility of the German army. This is an outstanding achievement and it will contribute much to hastening the end of the war, which we hope and pray is not far off.

★★★★★★★

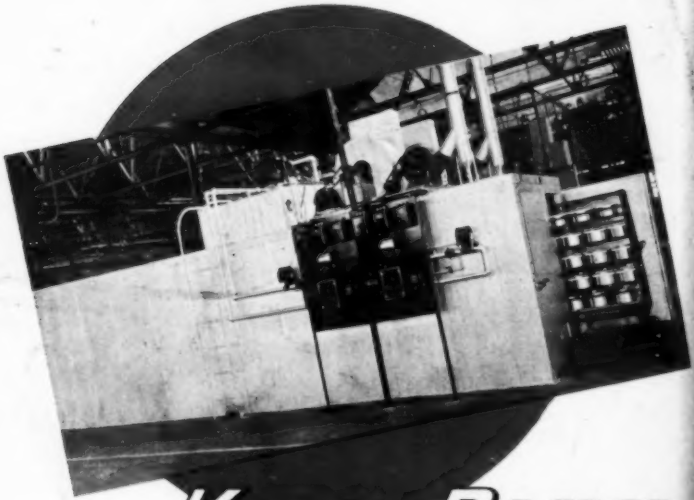
We here at Advance are 100% behind the call for unconditional surrender of our enemies—and we're doing all in our power to help bring it about. We're fighting, we're making war finishes—and buying bonds.

★

ADVANCE PAINT COMPANY

*Manufacturers of Wood & Metal Finishing Materials*

INDIANAPOLIS, INDIANA



# KIRK AND BLUM

## INDUSTRIAL OVENS

### ASSURE FASTER AND BETTER PRODUCT FINISHING

Increased rate of production, better finishing jobs in less time with maximum safety, conservation of fuel and manpower . . . these are among important results being achieved right now by Kirk & Blum Industrial Ovens.

Whatever your particular problem, Kirk & Blum Engineers are prepared to design and install a baking or drying system GUARANTEED to turn out superior product finishing . . . at lower cost.

SEND FOR ANY OF THESE BOOKLETS:

"Industrial Ovens"
"Dust Collecting Systems in Metal Industries"
"Fan Systems for Various Industries"
"Blower Systems for Woodworking Plants"
"Cooling Systems for the Glass Industry"
"Data on Kirk & Blum Production Facilities"

THE KIRK & BLUM MANUFACTURING CO.
AN ORGANIZATION OF ENGINEERS AND MECHANICS
2831 SPRING GROVE AVE. CINCINNATI, OHIO